The Environmental Concern

of

Commerce Students

- a Survey.

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Abstract

The evolution of attitudes towards the environment has culminated in the entrenchment of environmental concern as a characteristic of Western society. Overseas research has found young, well educated, urban individuals are most likely to express concern for the environment. However, the features of environmentally concerned New Zealanders have largely failed to attract the attention of researchers. In a sample of University of Canterbury Commerce students, aspects of environmental concern, and salient issues, were identified. As expected, individuals raised in urban centres were more likely to express environmental concern, although the expected influence of age and education were not observed. Women were more concerned about the environment, as were New Zealand-raised and New Zealand-ethnic respondents. It was concluded that the environmental concern of this population has many similarities to populations in other Western nations in the salience of issues, the issues of concern, and the levels of concern shown. As the respondents in this study were not representative of the New Zealand public, the suggestions for further research focus on the need to investigate environmental concern in a representative sample. A need was also suggested for research into areas of specific concerns, actual behaviour, commitment, and knowledge in the New Zealand population.

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To my parents, thanks for always allowing both my good and horrendous ideas to reach their conclusion or die a natural death, and for supporting me regardless of the outcome. Finally to Paul, the light at the end of all the tunnels, thankyou for being there for me and for giving me the motivation and reason to complete this.

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List of Abbreviations/Acronyms

Please note that the section details listed in parentheses after an abbreviation refer to the section of the questionnaire in which the items which make up a particular variable are included. See Appendix 1.

ASSUM	Assumptions (Section II)
BON	Balance of Nature (Section II)
CFED	Concern for Environmental Degradation (Section II)
CONCERN	Stated Personal Environmental Concern (Section I)
DSP	Dominant Social Paradigm
ECON	Economic versus Environment trade-off (Section II)
ENCO	Environmental Concern (Section II)
ENPOW	Environmental Powerlessness (Section II)
GENPER	Gender Perceptions (Section II)
HEP	Human Exceptionalism Paradigm
HON	Humans over Nature (Section II)
IMPTC	Stated Importance of Environmental Issues (Section I)
LOC	Locus of control
LTG	Limits to Growth (Section II)
MIP	Most Important Problem
NEP	New Environmental Paradigm
QUAL1W	Perceived Quality of the World Environment (Section I)
QUAL2NZ	Perceived Quality of the New Zealand Environment (Section I)
QUAL3C	Perceived Quality of the Canterbury Environment (Section I)
SCAW	Scarcity Awareness (Section II)
TECHNO	Technocentrism (Section II)
TENET	Ecological Concepts (Section II)
TIME	Time Orientation (Section II)
URBAN	Urbanism (Section II)

CHAPTER 1

Introduction

> "The second half of the twentieth century has seen the emergence of numerous social movements in the United States. Most of those movements have faded away with little discernible impact, but history will surely record the environmental movement as among the few that significantly changed our society."
>
> Riley E. Dunlap & Angela G. Mertig
> American Environmentalism (1992)

The dramatic rise of public interest and concern with environmental issues has been well recorded in polls and research, especially in the United States and Europe, since the beginning of the latest wave of concern in the late 1960s. New Zealand, however, was not so quick to monitor public opinion on the subject, and there is little in academic literature to indicate the extent to which New Zealanders have followed the trend of increasingly entrenched environmental concern. In retrospect, much can be inferred about our attitudes to the environment from the public actions of New Zealanders throughout the last thirty years.

This chapter outlines the origins of environmental concern from earliest times through to the waves of modern environmental concern that have been identified. This is followed by an analysis of environmental concern in New Zealand based on the activities of New Zealanders in their public and private lives, and the activities of successive governments as a result of public pressure.

1.1 Environmental Concern and the Environmental Movement

"What people do about their ecology depends on what they think about themselves in relation to things around them."

White Jr., L. The Historical Roots
of Our Ecologic Crisis (1967)

1.1.1 The Origins of Environmental Concern

Environmental concern has been probably existed in human populations for as long as environmental degradation and pollution have affected those populations (Krause 1993). Nearly 3700 years ago, Sumerian cities were being abandoned as the irrigated lands that produced the world's first agricultural surpluses became increasingly saline and waterlogged (McCormick 1989). Crop failure and soil erosion plagued first century Rome; over-population spelled the demise of the tenth century Mayan civilisation; by the early 1660s, medieval England, particularly London, was living under a thick pall of coal smog (McCormick 1989). However, to understand the characteristics of modern environmental concern, it helps to have an understanding of the evolution of Western society's attitudes to the environment.

In pre-Hellenistic times (pre-300 BC), when religion was pantheistic and animistic, nature represented the divine, to be respected and obeyed (Glacken 1990, White 1967). The rise of the civilisations of ancient Egypt, Rome, and Greece (323 BC - 30 BC), with the corresponding development of artisanship and agriculture, saw a new concept of nature emerge. As people gained increasing control of their environment, they viewed themselves as finishers of creation (Glacken 1990, White 1967). With the decline of Greece and Rome, and the development of Christianity, people also began to envisage themselves increasingly as separate from nature, created in the image of God, and given dominion over a creation which was designed specifically for them (Glacken 1990, Nash 1989, White 1967). This perceived superiority spawned the idea that people were somehow immune from or above the ecological constraints that applied to other animals (Albrecht *et al.* 1982). In addition, Christianity encouraged a faith in progress (White 1967), and a belief that nature had no rights (Nash 1989).

The idea of a designed earth persisted through the middle ages when the widespread domestication of obviously strong animals was taken as proof of God's intention that people should use and control nature (Glacken 1990). By early modern times, the ideas of Descartes, that nature was mechanical and animals were soul-less, non-sentient automata, rationalised the treatment of animals, slaves, and women. Indeed, Descartes's explicit aim was to make people "the lords and possessors of nature" (Nash 1989, Thomas 1983). This led to more purposive control of nature through applied science, and later through the marriage of science and technology (Glacken 1990, Thomas 1983). The ascendancy of people over nature became the goal of human endeavours, a position morally upheld by theology (Thomas 1983). However, by this time the evidence of careless rather than purposive destruction of the environment was increasing and becoming increasingly visible. Exposure to "primitive peoples", who were assumed to be living in harmony with their environment, succeeded in further emphasising the role of Western people outside nature (Glacken 1990).

By the late 17th century, however, the anthropocentric tradition was beginning to be eroded, and the idea that the world existed for people alone began to be rejected as the Epicureans, sceptics, and cynics had done in ancient times (Glacken 1990, Thomas 1983). The discovery of bacteria, protozoa, vast tracts of wilderness in the New World, and eons of fossilised pre-history indicated creatures and worlds for which people had no apparent use, and on which they had no apparent effect (Nash 1989, Thomas 1983).

The ideas of Thomas Hobbes, that people *and* animals were entitled to use nature only for their preservation and subsistence, began to gain prominence (Nash 1969, Thomas 1983). Concern for animal welfare followed, and in 1824 the Royal Society for the Prevention of Cruelty to Animals was founded (Nash 1969, 1989; Thomas 1983), although this concern developed in parallel to a decreased dependence on animal labour due to the increased industrialisation of production processes (Thomas 1983).

A similar but somewhat separate concern for the environment, particularly wilderness, began to develop as the size of cities and levels of pollution increased, and as agriculture encroached on the last truly wild areas in Europe (Thomas 1983). Wilderness became a source of spiritual renewal as people vacationed away from the malaise and pollution of city life. The era of the Romantics, who held that nature 'improved' was nature destroyed, led to the beginnings of the preservationist and protectionist groups of the 1860s in Britain. However, as Britain had no remaining wilderness areas, and the United States

had so much wilderness that it was viewed as an obstacle to civilised living that had to be conquered, the predominant focus for such organisations was on humanitarian and animal issues (Nash 1989). In the United States, slavery was initially considered an issue far more deserving of concern than environmental issues when the latter was first brought to public attention (Nash 1989).

It was not until the after the Industrial Revolution, in the late nineteenth century, that environmental concern actually took on the qualities of a "movement" (McCormick 1989, Pawson pers. com.). [1] Three 'waves' of the environmental movement have been identified (Pawson, pers. com., Nash 1969, 1989). As discussed above, the first wave began as early as the 1860s in Britain with the establishment of the first protectionist groups (McCormick 1989, Nash 1989). This was emulated in the United States with such people as Henry David Thoreau, George Perkins Marsh, and John Muir supporting the preservation of rapidly disappearing areas of wilderness and predator species (Nash 1969, 1989).

This encouraged an increasing emphasis on protecting unique landscapes, and ultimately this resulted in the creation of the world's first National Park at Yellowstone in 1872 (Dunlap & Mertig 1992, McCormick 1989, Nash 1969). This example was followed by New Zealand with the creation of Tongariro National Park in 1894 (McCormick 1989). Initially the purpose of creating National Parks in the United States was utilitarian in focus, as administrators saw the need to protect water supplies and game species habitat (Nash 1989).

Nash describes this as a time when "sufficient change had occurred in American life and thought to make possible a widespread reaction against the previous condemnation of wilderness...The average citizen could approach wilderness with the viewpoint of the vacationer rather than the conqueror" (1969, p.143). He goes on to suggest that Americans began to realise that wilderness and "the Frontier" were factors shaping their "national character", and that this was being rapidly lost (Nash 1969, p.145). The same could be said of the relationship between New Zealanders and their environment, since the so-called

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[1] One definition of 'environmental movement' suggested by Morrison, Hornbeck, and Warner (1972, cited in Waghorne 1977:3) was: "a greatly increased level of general societal concern with problems in the relationship of man (sic) and his environment". In addition, the environmental movement was described by Wilson (1973, cited in Waghorne 1977:24) as a 'general' movement, as opposed to a 'specific' movement. This was defined as "changing opinions, attitudes, self conceptions and ideas in which a new Geist or consciousness is aroused or disseminated".

"Kiwi ingenuity" is widely recognised as having evolved from the isolation and resultant self-reliance of the early settlers in the New Zealand 'wilderness'. In addition, the influence of science played its part in changing the public's perception of their relationship to the natural world. When Darwin published *The Origin of Species* (1859) and *The Descent of Man* (1871), Nash claims it "took the conceit out of humanity by putting humans back into nature" (1989, p.42).

With the onset of the World Wars and the Great Depression, however, the movement's following declined (McCormick 1989, Nash 1989). The second wave of environmental concern, in the 1930s and 1940s, was spurred on by the expansion of ecological research, and was more deeply rooted. It focused on the ecological impacts of production processes, particularly agricultural processes (Nash 1989). In the United States the Dust Bowl ecological disaster, which threatened the productivity of vast areas of the Great Plains, was of national concern and directly affected more than six states (Dunlap & Mertig 1992, McCormick 1989, Pawson pers. com.). However, the focus was still predominantly utilitarian as Americans, still living in the shadow of the Great Depression, expressed their concern and need for a secure and sustained food supply (Nash 1989).

The establishment of the Tennessee Valley Authority in 1933, the Civil Works Program of the Army Corps of Engineers, and the Bureau of Reclamation served some of these concerns. The multi-purpose projects these agencies administered were developed primarily for, among other things, flood control, irrigation, and water supply (Brockman & Merriam 1979, Dunlap & Mertig 1992). In New Zealand similar concerns led to the creation of local Catchment Authorities to manage the effects of environmental damage on agricultural productivity (Britton *et al.* 1992).

The third wave of environmental concern, which continues to this day, began in the late 1960s with what McCormick called "the true environmental revolution" (1989:vii). Many writers (Dunlap & Mertig 1992, Freudenberg & Steinsapir 1992, Krause 1993, Mitchell *et al.* 1992, Sale & Foner 1993) have attributed the triggering of this so-called revolution in the United States to the publishing of Rachel Carson's book, *Silent Spring*, in 1962. Over the next decade, the public had increasing access to the ideas of such writers as Paul Erhlich with *The Population Bomb* and *Ecoscience*, Barry Commoner with *The Closing Circle*, and Edward Goldsmith with *Blueprint for Survival* (Cronin 1988).

By 1970 environmental concern had become a passionate cause, eliciting vocal protests, petitions, and demonstrations, of which the largest was Earth Day, held in April 1970, which attracted over 300 000 demonstrators in Washington D.C. alone (Krausé 1993, McCormick 1989). Earth Day has been described as the beginning of the environmental movement in its role as a major social movement (Dunlap 1993, Dunlap & Scarce 1991, Gigliotti 1992, Murch 1971). This was backed by a sympathetic mass media, then as now regularly reporting the latest aspects of environmental degradation (Arcury & Johnson 1987, Dunlap 1992, Dunlap & Scarce 1991, Johnson & Gardiner 1991, Mason 1972). Nash (1989) suggests that environmentalism quickly took on the characteristics of a religion, with supporters displaying an intensity of commitment and a tendency to conceptualise the issues in terms of right and wrong.

Backed by increasing scientific evidence of ecological damage, predictions of the catastrophic effects of overpopulation, and major concern over the implications of nuclear weapons and the effects of radioactive fallout, the environment became a supremely important public policy issue (Mannion & Bowlby 1992, McCormick 1989). The Stockholm Conference on the Physical Environment of 1972 brought the issue into the global arena for the first time, and resulted in the creation of the United Nations Environment Programme (McCormick 1989).

Subsequently the number of environmental groups skyrocketed, as did their memberships. The number of conferences dealing exclusively with environmental concerns, the number of state and federal environmental ministries or administrations, and the number of environmental regulations or laws all increased dramatically throughout the 1970s and well into the 1980s (McCormick 1989, Sale & Foner 1993). This reflected the considerable popularity of environmental protection among the general public (Sale & Foner 1993), and, as described by poll results in Chapter 2, the public had indeed taken the environmental revolution to heart (Dunlap 1993) to the extent that some writers considered it had become an integral part of American culture (Sale & Foner 1993).

But was this "environmental revolution" mirrored in New Zealand?

1.1.2 Environmental Concern in New Zealand

New Zealand's early history of resource use, as in many other New World countries, was defined by the apparently unthinking exploitation and waste of natural resources. Initially whales and seals were brought to the brink of extinction by transient Europeans.

Later, exploitation grew with increased European settlement to include hardwood logs, notably kauri, as well as flax and kauri gum. As settlements became established, agriculture became increasingly important. Vast areas of lowland forests were slashed and burnt to make way for the green pastures required for agricultural production.

Memon describes New Zealand's European settlers as having "utilitarian values shared by a majority of the population, underpinned by a strong belief in the unfettered rights of the private property owner and a virtually unquestioned faith in the ability of the Government (with the assistance of scientific understanding and technical ingenuity) to manipulate the environment in order to promote growth" (1993, p.18). It seems that these attitudes were not confined to early settlers since, in the mid-1960s, people who spoke out in defence of the environment were seen as potentially revolutionary, to the extent that some lost their jobs (Waghorne 1977).

As New Zealand grew as a nation, the growth and development seen as necessary for the survival of our young nation by successive governments was manifested in large development projects which required the input of vast sums of money and resources. This culminated in the "Think Big" projects of the 1970s and 1980s which epitomised New Zealand's apparent lack of concern for efficient use of resources as economic development took priority (Palmer 1995). This is not to say that New Zealanders were not concerned for the environment, but simply that our history is inextricably intertwined with the development and progress that resulted in the extensive exploitation of natural resources. The suggestion by Wall that "Canadians historically identified their economic interests with resource exploitation, and...this, accompanied by a historically developed expectation of limitless resource availability, may have tempered support for environmental protection in Canada *in the past*"(1995, p.300, italics added) would appear to apply equally to New Zealanders.

New Zealand's history of early environmental concern certainly seems to reflect Wall's suggestion, and aspects of the waves of environmental concern described earlier, were evident despite our predominantly utilitarian view of the environment. In the 1930s and 1940s, most of New Zealand's environmental concern centred on the problems of flood management and soil erosion, both of which were a major barrier to continued productivity for increasing numbers of farmers. As a result, as previously mentioned, local Catchment Authorities were set up in an attempt to manage these problems (Britton *et al.* 1992).

New Zealand also had a high proportion of its land (almost 20%) protected under the conservation estate as National Parks or reserves (Britton *et al.* 1992, Sheevin 1993). Although this is one of the highest proportions of protected land in the world, it is estimated that less than 0.5% of this was protected in preference to putting it to 'productive use' (Britton *et al.* 1992). Most of New Zealand's protected land is mountainous and relatively inaccessible, making it unsuitable for agricultural or forestry use, as was initially considered to be the case for the world's first National Park, Yellowstone (Nash 1969).

Similarly the reduction in the logging of native forests, and the recent series of Forest Accords and agreements, are probably more a result of external factors (i.e. high costs of logging the remaining inaccessible native forests, low costs and increasing availability of exotic plantations, increased shareholder resistance) than any genuine concern of logging companies for protecting the environment (Britton *et al.* 1992).

Despite this perhaps cynical approach to the history of New Zealand's environmental concern, New Zealanders have in fact been very vocal over the environmental issues that concern them for reasons other than their productive or utilitarian capacity (Bell 1994). In fact, environmental issues in general have a high profile in New Zealand (Bell 1994).

As previously mentioned, the publishing of *Silent Spring* was hailed as the beginning of the modern environmental movement in the United States. In New Zealand, the proposal to raise Lake Manapouri was the issue that signalled the beginning of this country's "environmental revolution". Approval had been given by the National Government to establish an aluminium smelter near the Port of Bluff in 1960 as part of the series of large-scale national developments. To power the smelter, additional electricity had to be generated, and a proposal was put forward to raise the level of Lake Manapouri in Fiordland National Park (Gilbert 1986, Memon 1993, Palmer 1995). By 1969 the 'Save Manapouri Campaign' was under way, and in 1970 a 265 000 signature petition (9% of the population at the time) was presented to the Government. Following the 1972 national election, in which Lake Manapouri was a major issue, the newly elected Labour Government reversed the decision to raise the lake (Gilbert 1986, Memon 1993).

In the same year, the world's first 'Green' party, known as the Values Party, was founded in New Zealand. The Values Party advocated, among other things, environmental protection and wise resource use (Gilbert 1986, Mannion & Bowlby 1992, McCormick 1989). By 1975 it was contesting all of the seats in the national election, and won 5.2% of

the vote. However by 1981 this share was reduced to 0.2% (Gilbert 1986, McCormick 1989). This drop in popularity may not necessarily have reflected a drop in environmental concern by New Zealanders, since environmental battles were still being fought throughout this time[2], and the memberships of environmental groups were growing (Waghorne 1977). The environment was, however, becoming increasingly politicised, and both the National and Labour parties began to accommodate environmental concerns and form policies to answer those concerns (Bell 1994, Britton *et al.* 1992).

What followed on from this series of events was the establishment of an environmental administration in parallel with similar developments worldwide. Following their election in 1972, the Labour Government, strongly influenced by the National Environmental Policy Act passed in 1969 by the U.S. congress, introduced the position of Minister of the Environment. Later that year the independent position of Commissioner for the Environment was established to oversee environmental assessment and advise on environmental policy. At that time neither post had specific powers, supporting legislation, or a ministry (Gilbert 1986). In the same year, the Environmental Protection and Enhancement Procedures (EP&EP) were introduced. A method of assessing the environmental effects of activities, the EP&EP were initially used by government departments and were not specifically mandated by any supporting legislation (Gilbert 1986).

These deficiencies were not remedied until the mid-1980s when, having spent nine years in opposition with the opportunity to develop a comprehensive environmental agenda, the Labour Party came to power (Britton *et al.* 1992). During this time the Labour Government attempted to separate conservation from commercialisation of resources by setting up State Owned Enterprises and Department of Conservation. These measures have had their critics because all are subject to market-led, neo-classical economic programmes with accountability of costs (Britton *et al.* 1992).

The most recent, and most important part of New Zealand's environmental administration is the Resource Management Act (RMA). Although passed into law by a National Government in 1991, the RMA originated with the Minister for the Environment of the preceding Labour Government. That the Minister was also the then Deputy Prime

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[2] An example was the protests against using South Island beech forests for chipwood export (Britton *et al.* 1992).

Minister was "indicative of the importance that Labour placed on environmental issues" (Britton *et al.* 1992, p.194). More importantly, from the point of view of this research, was the fact that over 3500 submissions on the proposed legislation were received, indicative of the importance with which the legislative management of New Zealand's natural resources was regarded by the general public.

The RMA is important for a variety of reasons. It is regarded as a world first in that one of its key concepts is 'sustainable management' (Palmer 1995), a concept previously embraced by Labour in its election manifestos (Britton *et al.* 1992). 'Sustainable development' was first evoked internationally as responsible environmental behaviour for nations by the Brundtland Commission in their 1987 report, *Our Common Future*.[3] This was rapidly absorbed into the language of the Ministry of the Environment in a publication the following year (Cronin 1988), and ultimately resulted in the adoption of the sustainable management concept so central to the focus of the RMA.[4]

Another important part of the RMA is that it makes the assessment of environmental effects, modelled on the EP&EP methods, a legislative requirement for many classes of activity. This had the effect of making the consideration of their impact on the environment a day-to-day issue for many New Zealanders (Britton *et al.* 1992).

Finally, the RMA requires "an identification of those persons interested in or affected by the proposal, the consultation undertaken, and any response to the views of those consulted" under the Fourth Schedule. This constitutes a legislative requirement for public participation, and gives individuals and communities legal standing. This effectively allows New Zealanders the opportunity to voice their opinions on how the environment is managed and developed, an avenue never previously as accessible.

It seems that interest, concern, and awareness of environmental problems have apparently changed the environmental attitudes of New Zealanders since our settler days in the 19th century, and "[while] public interest in environmental issues has waxed and waned

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[3] Sustainable development was defined as "meeting the needs of current generations without compromising the ability of future generations to meet their own needs" implying responsibility to sustain the resource base and recognising the limitations of the biosphere to absorb the effects of human activity (WCED 1987, p.7-8).

[4] Sustainable management is defined in the RMA as "managing...of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their...well being and for their health and safety while-(a) Sustaining the potential of natural and physical resources...to meet the...needs of future generations; and (b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and (c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment."

in response to particular concerns of the time, the environmental movement has gradually acquired a public standing comparable to other pressure groups such as those representing farmers or manufacturers" (Memon 1993, p.44).

1.1.3 The Nuclear Debate: New Zealand's Involvement

Environmental concern in New Zealand can be described as primarily concern for protecting unique landscapes, resources, and endangered species in this country. Indeed it would seem that the nation's environmental concern is an issue of protecting New Zealand's natural heritage. Yet the nuclear debate is different in this respect. Concern over nuclear testing does not focus exclusively on New Zealand, or on a single issue such as environmental degradation. It encompasses, in this instance, the South Pacific region, and, among others, the issues of peace, indigenous peoples' rights, and disarmament. As such it is treated separately from general environmental concern in New Zealand in the following section due to its apparent ambiguity as an environmental issue (see also Sections 3.6 and 4.2). The international nuclear debate is one in which New Zealand has taken an outspoken role, and in doing so, has stamped the nuclear-free stance firmly into the New Zealand identity. Over time, however, a somewhat different position has metamorphosed from the original reasons for the protest.

During the 1960s France was only one of four nations testing nuclear weapons. The red glow of the aftermath of atmospheric testing at Moruroa Atoll was visible from northern parts of New Zealand, and New Zealanders, principally church groups, began protesting under the peace banner (Lange 1990). In 1963, 80 000 people signed a petition to end nuclear testing in the Southern Hemisphere (Lange 1990). Despite the fact that public concern over the testing was widespread, little was done to directly confront the problem.

In 1972 Labour was elected to parliament, and decided to take on the nuclear issue. "In a striking move designed to focus world attention on the testing at Moruroa, the government sent two of its small fleet of frigates into the test zone" (Lange 1990:17). The following year both New Zealand and Australia challenged France in the International Court of Justice as to its right to explode nuclear tests in the atmosphere. France conceded, and declared that in future all tests would be conducted below the surface of the atoll (Lange 1990).

By 1975 Labour was proposing to set up a nuclear-free zone in the South Pacific, an action which was adopted in principle at the South Pacific Forum. The election of the

National Government late that year, however, saw the idea dropped (Lange 1990). The threat posed by nuclear weapons was not forgotten by New Zealanders though, and when Prime Minister Robert Muldoon invited the visit of a nuclear-powered cruiser from the United States, it sparked massive protest. The American policy of the time was to neither confirm nor deny the presence of nuclear weapons aboard their vessels, and this appeared to heighten public concern (Lange 1990, Small 1979).

In 1978 Labour took this concern to heart, and fought its election battle on a promise to close New Zealand's ports to nuclear-powered or nuclear-weapons-carrying vessels. This was viewed as a hostile move by the Americans, who declared that if such an action was put in place, their participation in the ANZUS alliance could not be guaranteed (Lange 1990). Although the Labour party lost that election, the nuclear issue was not dropped. When David Lange became leader of the Labour Party in 1984, he tried to convince members to allow nuclear-powered vessels, though not nuclear weapons. This met with such a wall of opposition that he quickly backtracked, and continued with a totally nuclear-free policy (Lange 1990).

When it did come to power in 1984, having fought the election with the nuclear issue as one of its main platforms, the Labour Party quickly put the policy into place (Britton *et al.* 1992). "By international law, no foreign military vessel or aircraft could enter New Zealand without the permission of the government" (Lange 1990:59). In the same year 94 local bodies declared themselves nuclear-free, which meant that over half of the population of New Zealand lived in self-proclaimed nuclear-free zones (Lange 1990), and by 1985 the New Zealand Government had declared its anti-nuclear stance to the United Nations (Palmer 1990).

The Americans tested the water in 1985 by proposing to send the USS Buchanan to New Zealand but would neither confirm nor deny whether nuclear weapons would be on board. New Zealanders protested with a vengeance, with over 15 000 people walking through downtown Auckland chanting "If in doubt, keep it out" (Lange 1990). The Labour government subsequently insisted that if the ship was nuclear-capable it would not be allowed in. Despite this (or perhaps because of this), New Zealand's international image, and self-image, as a 'clean and green' country was cemented into place.

Greenpeace[5] anti-nuclear protest activities to Moruroa Atoll, which are guaranteed to grab international media attention, were often launched from New Zealand. The resultant political, diplomatic, and public pressure ultimately resulted in the French bombing of the Greenpeace vessel, *Rainbow Warrior*, in Auckland Harbour in July 1985 (McCormick 1989). Although this attack was directed at the Greenpeace activists, New Zealanders took it as a personal attack on their anti-nuclear stance as evidenced by public discussions and 'letters to the Editor' at the time.

Since that time, the New Zealand public has continued to support this country's nuclear-free status. Although initially the anti-nuclear policy was associated with support for Labour, by 1989, when support for the Labour Party was low, over 80% of the population were in favour of the nuclear-free policy (Lange 1990). As recently as September 1995, New Zealanders actively supported and participated in the peace flotilla to Moruroa Atoll and petitions protesting at nuclear testing in the South Pacific, attracting world wide attention (see Section 3.6).

1.2 Aims and Purpose of this Research

As Dunlap and Mertig (1992) suggest, concern for the environment appears to have become firmly entrenched in the way of thinking of vast populations of people in Western society. Have we, as New Zealanders, joined in this massive uprising of concern for the environment, or are our public displays of outrage simply a localised response to a currently topical issue? How strongly do we hold our beliefs about the rights of the environment? Are there differences in the attitudes held by different segments of our society? These are the questions to which this research will respond in relation to the sample population chosen.

The aim of this research is two-fold: to provide a 'snapshot' of the environmental attitudes of the sample population, and compare some aspects of these attitudes with the results of published studies. This research is descriptive, and attempts to answer the question of 'what does this sample population think and believe about their natural

[5] Greenpeace is a radical environmental group which appeared in the 1970s when environmental legislative reform was seen to be failing. It was formed to represent the interests of activists wanting to take direct forms of action and protest, while not ascribing to the violent "monkeywrenching" sabotage of other pro-environment groups such as the Sea Shepherd Conservation Society and Earth First!(Nash 1989). Greenpeace has a philosophy of "ecology as religion" (Nash 1989), and uses non-violent, high-visibility protest action to draw international media attention to environmental problems and issues.

environment?'. While some attempt is made to explain the response to specific questions with regard to salient events, in general, causative factors are not investigated.

The purpose of this study is to attempt to define the variables that identify environmentally concerned individuals in the population sampled, not to define why they are concerned. In some respects this may limit the usefulness of the research because interested parties cannot identify and address the causes of environmental concern. However, given that little research has investigated the general environmental attitudes of particular segments of New Zealand society, this study fills a need. It identifies the character and extent of environmental concern and illustrates its importance to these respondents. This is relevant particularly in relation to assessing environmental policy priorities and implementation options for New Zealand communities (James 1993), and for identifying the valuable resource of public support (Dunlap 1992) and input (Tucker 1978) that is so often lacking for regional and central government decisions. This research is placed in context by comparison with results of overseas studies.

1.3 Thesis Format

Chapter 1 has provided an introduction to environmental concern as the basis for understanding the current level of concern exhibited in the sample respondents. This chapter has also explained the purpose and aims of this research, including its limitations and context. Chapter 2 reviews the literature in sections which deal with the definitions of environmental concern, attitudes, and beliefs, the influence of population characteristics, and aspects of environmental concern as a measured phenomenon. Chapter 3 describes the methods used to obtain data on environmental attitudes. This chapter moves in a logical progression from design and testing, through to timing and response rate. Chapter 4, the results, is set out in four sections. The first three are descriptive statistics illustrating the characteristics of the respondents, and how they answered the questions of the survey. The fourth section deals with the results of statistical tests. This is followed by Chapter 5 which discusses the results and interprets them in comparison with published studies. Finally, Chapter 6 summarises this study, explains the conclusions reached, and suggests areas for further research. This is followed by the Bibliography and Appendices.

CHAPTER 2

Literature Review

As has been suggested in Chapter 1, the environmental movement has become an entrenched characteristic of modern Western society. This is most graphically illustrated by the findings of an international survey of environmental attitudes conducted by Dunlap, Gallup, & Gallup (1993). They conclude that there is clear evidence that concern for the environment has become a world-wide phenomenon, that citizens see environmental problems as increasingly serious and threatening to health, and that environmental quality is perceived as deserving a higher priority than economic growth. This worldwide environmental concern and awareness has apparently manifested itself in the public actions of New Zealanders. But what characterises environmentally concerned individuals? This chapter will describe in some detail the findings of published studies in an attempt to determine the parameters of environmental concern and the features of environmentally concerned individuals.

2.1 Definitions

2.1.1 Environmental Attitudes, Beliefs, and Concern

Although no-one states it specifically, environmental concern must develop from the attitudes and beliefs of an individual about the environment. Bruvold (1973) defined attitude as "the general affective response to a denotable psychological object" (p.204), and belief as "statements about existing states of nature which the individual accepts as true or factual" (p.205). Similar definitions are presented by Newhouse (1990).

Beliefs can be classified as positive or negative with regard to the attitude object such that, if, for example, the attitude object is the result of desirable antecedents or the cause of desirable consequences, the belief will be positive (Bruvold 1973). Similarly, attitudes can range from extremely negative, associated with a behaviour that the individual would have to be coerced into doing, to extremely positive associated with a behaviour that the individual would have to be coerced to *not* do (Guagnano, Stein, & Dietz 1995). The relationship between beliefs and attitudes is complex, and for the purposes of this research they will not be considered separately.

With regard to the environment, beliefs and attitudes have been defined in many ways. Syme, Beven, & Sumner (1993) defined environmental disposition as a series of general attitudes towards environments of different physical and psychological attributes, and the person's enjoyment of interacting with them on a day-to-day basis. Ramsey & Rickson (1976) identified four types of attitudes which lead to corresponding reactions to programmes on environmental quality. These types are: passionate interest, favourability, resignation, and trade-off where the costs of the programme are cause for debate. Lansana (1992) defined environmental awareness as an individual's perceived degree of understanding of issues concerning the environment. However, McIntosh (1990) suggests that the level of awareness is not necessarily positively related to the level of environmental concern.

Environmental concern has also been defined in various ways. Yearly (cited in Martell 1994, p.133) suggests that "environmental concern is a response to the experience of loss of control over our surroundings as a result of new ecological difficulties which cannot be solved through the normal processes of problem solving". Hays (1987) describes environmental concern as a change in values from a concern with the standard of living as determined by material well-being and physical security, to a concern with the quality of life. This, he claims, grew out of a concern for the quality of places, of particular physical settings, especially local ones. Caro & Ewert (1995) define environmental concern as "the level of perceived harm being done to the natural environment by a specific act or action" (p.14).

Attitudes have been described as a personality trait which serves the basic function of organising and aiding the individual's understanding of the world by providing a framework for conforming to subjective norms and serving as expressions of basic values (Horsley 1977). In the same vein, environmental attitudes have been described by Hines, Hungerford, & Tomera (1987) as an individual's beliefs, values, and feelings with regard to particular aspects of the environment or issues related to it. This does not distinguish between beliefs, attitudes, or values but combines them into an all encompassing personality characteristic which could perhaps more accurately be labelled environmental concern. This is the definition to be used in this study, and is supported by writers who suggest that environmental attitudes are multidimensional and complex in nature (Berberoglu & Tosunoglu 1995, Kuhn & Jackson 1989), the individual aspects of which cannot easily be measured separately.

2.1.2 Social Paradigms

As described in the previous chapter, throughout history Western society has developed a "strong anthropocentric tradition" (Albrecht *et al.* 1982, p.39). Although we can attempt to define environmental beliefs and attitudes, it is somewhat more complicated to describe the ideas that actually constitute those beliefs and attitudes. Catton & Dunlap (1978) and Dunlap & Van Liere (1978) attempted to do just that. Based on the work of Stephen Cotgrove and others, they postulated the existence of three social paradigms, the Dominant Social Paradigm (DSP), the closely related Human Exceptionalism Paradigm (HEP), and the New Environmental Paradigm (NEP). Olsen *et al.* (1992) define a social paradigm or worldview as pervasive beliefs about the nature of social reality and values concerning desirable and undesirable social conditions. They claim that a DSP is held by most members of a society to some extent, and consists of common values and beliefs about physical and social environments which collectively provide a lens through which individuals interpret the world.

Olsen *et al.* (1992) go on to describe the existence of what they call the Technological Social Paradigm and the Ecological Social Paradigm, but as they seem to be versions of the dimensions of the DSP and NEP, they will not be considered in detail here.

The industrial DSP is described by Catton & Dunlap (1978) and Dunlap & Van Liere (1978) as a belief in limitless availability of resources, and the indefinite future progress of material growth. It supports the rights of private property owners and individuals, a laissez-faire government, and the status quo. It has faith in the problem-solving abilities of science and technology, and believes that progress and growth are normal and necessary. The HEP is a constituent part of the DSP, and consists of beliefs that people are separate from and above the rest of nature, unaffected by ecological constraints. It supports the idea that people are unique, and have a progressive culture which can eliminate problems and continue without limit.

Albrecht *et al.* (1982) and White (1967) argue that among other things, Christianity, capitalism, and industrialism have contributed to the formation of the industrial DSP, while Dunlap (1993) and Gigliotti (1992) comment that environmental problems may stem from materialism, growth, and progress. With an understanding of the development of Western society's attitudes towards the environment (see Section 1.1.1), it is easy to see how this could arise. Gooch (1995) comments that the DSP beliefs could be labelled primitive beliefs which are thought to be "some of our most deeply internalized and most determinative of

behaviors" (Gray, cited in Gooch, p.56). Gooch goes on to say that according to Gray, "these primitive beliefs, together with general environmental concern, with beliefs about the costs and benefits of individual or societal actions on the environment, and with beliefs about individual responsibility and rights are "primary beliefs". These can be placed at the base of an environmental belief system and lead in turn to derived beliefs concerning conservation, pollution and population, and to general environmental attitudes." (1995, p.516).

The growth of environmental concern has seen the development of a new set of competing values labelled as the NEP (Albrecht *et al.* 1982). The NEP is an alternative social paradigm which asserts the desirability of restricting growth, protecting ecosystems, and promoting a more harmonious relationship between people and nature. It holds the ecologically integrative view that humans are one species among many, interdependent and interconnected, subject to the limits to growth and finite nature of the earth. It also believes that there are limits to the ability of scientific and technological progress to solve environmental problems (Catton & Dunlap 1978, Dunlap & Van Liere 1978).

Dunlap & Van Liere (1978) constructed a scale consisting of 16 items measuring the different aspects of the NEP, Balance of Nature, Humans Over Nature, and Limits to Growth (see also Sections 3.1.2 and 4.3). They found that, in a sample of the general public, large majorities accepted the beliefs of the NEP. This led them to suggest that perhaps the DSP was in transition. It seems increasingly evident that, in fact, the NEP is slowly making the transition into a new DSP as a majority (56%) of the public hold or accept the beliefs of the NEP (Olsen *et al.* 1992).

2.1.3 Types of Environmentalists

O'Riordan (1989) describes environmentalism as a tension between two worldviews: that of nature as 'usufruct' and that of nature as nurture. He divided environmentalism into the two main parts of technocentrism and ecocentrism based on these worldviews. Technocentrists have the characteristics of arrogance and a lack of feeling, and support exploitation. Ecocentrists are supposed to have more compassion and hope, and support conservatism and sustentation.

Technocentrists are divided into two groups, the interveners and the more moderate accommodators. The intervenors (10-35% of the population) believe in the ability of humanly devised systems and managerial ingenuity to conquer adversity, have faith in the

application of science and market forces. Accommodators (50-70% of the population) support modest reform while retaining the status quo of the political economy, but are prepared to make concessions to environmental demands using the adaptability of institutions, assessment, and evaluation. They are socially responsible but still fundamentally manipulative and exploitative. According to O'Riordan, this position is the safe haven of the cautious and the anxious, and accommodators constitute the majority of Western society.

Ecocentrists are also divided into two groups, the communalists and the deep ecologists or Gaianists. Deep ecologists (0.1-3% of the population) are at the opposite end of the continuum to intervenors, and believe in the rights of nature and the essential need for the co-evolution of natural and human ethics. Communalists (5-10% of the population) are more moderate ecocentrists, and have faith in the cooperative capabilities of society to establish self-reliant communities based on renewable resource use and appropriate technology. They support federated politics and economically self-contained communities, the central unit of which is the household.

Despite these differences, O'Riordan claims that all four groups are environmentalists, as even the most staunch intervener believes that he/she is improving or enhancing the environment. Each position simply occupies a different point on the environmentalism continuum.

Heylen Research (1992) identified similar groups within New Zealand society, as did Colmar Brunton Research (1993). The results of the Project Green report, the results of which are very similar to that found by Heylen Research (1992), are presented below. The Green Indifferents, analogous to the intervenors, rated all environmental problems less seriously, are not interested in learning more, and would only buy environmentally friendly products is they were cheaper and more effective. Colmar Brunton found that this group comprised 18% of their sample. They are more likely to male, young to middle aged, and less well educated. They are also more likely to be blue collar workers or not working, on a low personal income, and from Auckland or Wellington.

Green Pragmatists comprised 27% of the sample, and are analogous to accommodators. Members of this group would not consider buying environmentally friendly products or performing environmentally responsible behaviours, and are least concerned about global environmental issues, but show higher levels of concern for other

problems. They are more likely to be female, over 60, poorly educated, and not working or retired. They are more likely to have no children and live in South Island main centres such as Dunedin and Christchurch.

The Green Faddists, analogous to the O'Riordan's communalists, make up 31% of the sample, and are almost equally divided by gender. They showed the second highest levels of performing "green actions", and make some effort to buy environmentally friendly products. They are more likely to be well-educated, full time professionals, with high incomes. They are also more likely to be married with children and come from the smaller urban centres such as Hamilton, Tauranga, etc.

Lastly, the Deep Greens, who are analogous to deep ecologists, comprise 24% of the sample. They are most likely to have performed all of the "green actions", will pay more for environmentally friendly products, and rate many environmental issues as very serious. They are more likely to focus on global environmental issues, be activists, and want to learn more about environmental issues. They are overwhelmingly more likely to be women, well-educated, and come from Auckland or Wellington, although they are also more likely to have low personal incomes and be not working or employed part time.

Of the Heylen Research (1992) sample, 9% strongly opposed and 9% mildly opposed conservation and environmentalism. A further 38% were in mild support and 9% strongly supported conservation.

2.2 The Characteristics of Environmental Concern

Born & Wieters (1978) suggest that environmental concern may be superficial in nature for relatively large numbers of people. To use Ramsey & Rickson's (1976) terms, most people are in favour of protecting the environment, though few have a 'passionate interest' in the problem. This is supported by the results of Maloney & Ward (1973) who obtained results which show that while verbal commitment to environmental protection and environmental concern are high, actual commitment (as demonstrated by behaviour) and knowledge are low. Similar results were obtained by Lounsbury & Tornatzky (1977). Sale & Foner (1993) report a poll which indicates that while 55% of Americans are sympathetic to the aims of the environmental movement, only 7% are environmentally active.

Krause (1993) found that few people were willing to accept lifestyle changes as the difficulty of making those changes increased. He concluded that environmental concern was still largely superficial, and that people still believed nature existed for the use of people (Krause 1993). White (1967) was of the same opinion, and claimed that the ideas of people having dominion over nature have "permeated society so fully that even those who profess no religious faith or endorse other faiths may still tend to view humans as separate from the rest of nature and as having the right to use nature for our purposes" (p.724).

In the New Zealand environmental movement, self-professed Christians stressed that any belief in the values of putting nature first, or people as equal to and part of nature would be un-Christian (Waghorne 1977). In addition, half to three-quarters of Waghorne's respondents chose human needs as top of their priorities. In general, however, the movement's view of nature was that human's were intimately tied to, or part of nature, and that the environment was more than resources to be used. They invested nature with some spiritual, retreatist, and re-charging qualities. Respondents who were non-Christian, sportspeople, or anti-capitalist were more likely to want a compromise between quality of life and personal freedoms (Waghorne 1977).

Lansana (1992) found that although non-recyclers would not go to the extra effort or expense to recycle, both they and recyclers agreed that the quality of the environment is important. Similarly, Vining & Ebreo (1990) found that both recyclers and non-recyclers thought that recycling should be done for environmental reasons. However, they went on to suggest that protecting the environment is viewed by many as a luxury, and concluded that environmentally protective actions will only be taken by those with strong environmental values, or, to use Ramsey & Rickson's (1976) terms, those with "passionate interest".

This widespread, general environmental concern is apparent from a very young age, with children acquiring knowledge and developing attitudes about environmental issues as early as kindergarten (Leeming, Dwyer, & Bracken 1995). This finding was confirmed for New Zealand children of whom more than a third spontaneously cited pollution and other environmental problems when asked what they thought of our country in 1993 (Somogyvary 1993).

Van Liere & Dunlap (1981) conclude that while environmental concern is a broad concept it may be best represented by concern about pollution and natural resources, and

this approach is followed in this study. Both Gooch (1995) and Kuhn & Jackson (1989) comment, however, that beliefs and attitudes concerning such a complex issue as the environment are most likely to be complex and multidimensional.

2.3 Aspects of Measured Environmental Concern

2.3.1 Salience of Environmental Issues

The salience of an issue in the minds of the public is difficult to judge. Public opinion analysts have argued that "volunteered responses to most important problem (MIP) questions - that is, open-ended questions asking the respondents what they see as the country's most important problem or problems - are the best way to measure the salience of an issue" (Dunlap 1992, p.92-94). It has also been argued, however, that the responses to MIP questions are susceptible to media attention to particular problems (Dunlap 1992). This seems a particularly relevant consideration for issues which elicit a strongly emotive response, hence attracting readers, and is an important consideration for the nuclear issue (see Sections 1.1.3, 3.6, and 4.2).

In 1968, only 2% of a sample of the American public spontaneously mentioned environmental problems or issues in response to the MIP question (Dunlap 1992). By 1970, this had increased dramatically to 17% (Dunlap 1992), and in 1971 to 23% (Simon 1971) in similar sample populations. Erskine (1972) found that although conservation had moved up the list of 'most important problems', it was still below the "perennially massive worries" about social unrest and economy which are dominant in people's minds. In 1983, mentions of environmental issues had dropped back to 2%, but rose to 16% in 1989, and 21% in 1990 indicating the re-emergence of environment as a salient issue (Dunlap 1992). As Dunlap points out, however, "despite the relatively strong consensus in support of environmental protection, the state of the environment was viewed by only a minority of the [American] public as one of the nation's most important problems" (1992, p.96). This is confirmed by Gooch (1995) who reported only 10% of respondents from Sweden and the Baltic States indicated environmental issues in response to MIP questions.

Dunlap & Scarce (1991) comment that environmental problems still fail to reach the top of MIP lists of the American public even though levels of measured concern are the highest they have ever been. In their 1990 survey, 19% of respondents mention environment as the MIP facing the nation, while 63% mention environment as one of the

top three or four problems. Dunlap, Gallup, & Gallup (1993) found that respondents from 16 of 24 countries rate the environment as one of the top three problems facing their nation. The only concerns consistently mentioned more often are economic issues and violence/crime. Keys Young (1994) found that the environment is rated as one of two most important problems by 23% of their Australian sample. Environment ranked fifth behind unemployment, education, health, and crime.

In New Zealand, the majority of respondents (74%) expect that there will be very serious environmental problems which will affect them personally, that people are becoming more aware of environmental problems and issues (93%), and that the 'Green' movement is not just a passing phase (93%) (Colmar Brunton 1993). Heylen Research (1992) found that one-third of adult New Zealanders spontaneously mentioned 'the environment' or 'conservation' in some form as amongst the most important issues for people. However, the same report also found that 38% agree that unemployment is a more pressing problem than the threat to the environment, a similar response to the 31% rating unemployment as the most important issue in the Colmar Brunton report (1993). Mininstry for Environment & New Zealand Manufacturers Federation (1994) draw the conclusion that while manufacturers in New Zealand show an appreciation of what can and is being achieved in relation to environmental issues, some are still not convinced of the importance of resolving conflicts between environmental quality and the environmental effects of manufacturing. It seems obvious that while environmental issues are as salient as they have ever been, they are still not the most important problem for the public.

2.3.2 Specific Environmental Issues

Lounsbury & Tornatzky (1977) comment that people are more concerned about specific aspects or issues of the environment rather than the environment generally. Certainly people perceive different environmental issues or problems to be more of a problem than others.

Oskamp *et al.* (1991) found that 86% of American respondents considered air pollution to be the most serious environmental problem. Castles (1992) also found that air pollution was the most important environmental problem for Australians, followed by the destruction of trees and ecosystems, and ocean pollution. Of the top five environmental problems mentioned, three related to pollution issues. Another Australian study reports that pollution concerns, particularly those relating to water are most dominant (ANOP Research 1991), a finding supported by Keys Young (1994). Erskine (1972) observes a doubling of

the perceived seriousness of air and water pollution from 1965 (28% and 35% respectively) to 1970 (69% and 74% respectively) in American samples.

New Zealanders appear to have concerns about similar environmental problems. Gendall, Hosie, & Russell (1994) found that 90% of New Zealand respondents agree that pollution is endangering the environment. When questioned about the sources of that pollution, majorities agreed that industrial air pollution (95%), water pollution (90%), car emissions (88%), and agricultural chemicals and pesticides (85%) are a problem. The Project Green Report (Colmar Brunton 1993) found increasing concern and a high degree of perceived seriousness for toxic waste disposal, air and water pollution, native forest protection, and nuclear testing, with women in the 15-29 year age group showing most concern for the latter item. James (1993) found that 51% of her Wellington sample identified water pollution, particularly the sewage problem, as the most important environmental issue facing the region. This is followed by pollution in general (22.5%).

MfE & NZMF (1994) found that manufacturers consider waste management and recycling the major environmental issues facing New Zealand (68%). Legislative and government issues ranked second (37%), followed by air and water quality (27%), sustainability of resources (23%), and pollution control (19%).

Castles (1992) found ozone depletion is the most frequently mentioned global environmental problem in Australia, and is most likely to be mentioned by those in the 18-24 year age group, and least likely to be mentioned by those over 65. ANOP Research (1991) report that ozone depletion rated the second most concerning environmental problem, and comment that it is a better understood, more immediate, and more personal concern than other global concerns. However, the importance with which ozone depletion is rated as a global issue is a worldwide response (Dunlap, Gallup, & Gallup 1993). Bell (1994) comments that ozone depletion reappeared on the New Zealand public's agenda in the late 1980s. He goes on to say: "Depletion of the protecting ozone layer was personally and socially significant in a nation which was accustomed to spend summer tanning in the sun but which already had an incidence of resulting skin cancers among the highest in the world" (p.35). This is confirmed by the Project Green Report (Colmar Brunton 1993) which found increasing concern about the ozone hole, especially in women aged 30-39.

2.3.3 Stated Personal Environmental Concern

Krause (1993) found a high level of concern about most perceived environmental problems, and most (57.2%) respondents considered themselves to be environmentalists. ANOP Research (1991) comment that while economic issues and unemployment still rate as more pressing concerns in Australia, the environment now also is a permanent focus for concern. Castles (1992) found that 75% of Australians were concerned about the environment, while Keys Young (1994) found that 35% of their Australian sample were concerned 'a great deal' about the environment, with a further 50% concerned 'a fair amount'. Heylen Research (1992) conclude that New Zealanders have an ill-defined view of conservation which is apparently interchangeable with environmentalism. While 18% indicated strong or mild opposition to conservation, and 35% were neutral or ambivalent, 47% indicated mild or strong support for conservation.

2.3.4 The Effect of Proximity

Studies by Cary (1993), Hay & Johnston (1972), Keys Young (1994), McIntosh (1990), and Murch (1971) confirm the thesis that the perceived seriousness of environmental problems tends to decrease with closer proximity. In their Christchurch study, Hay & Johnston (1972) found that a majority of respondents believe that there is an air pollution problem in Christchurch, but that it affects areas other than where they live.

Murch (1971) found that pollution is seen as least serious locally and most serious nationally, and suggests that this phenomenon may be due to the broad national or global focus of most mass media items on environmental problems. Cary (1993) takes a slightly different approach. While his findings support decreased perception of seriousness of a problem the closer it is, he suggests that this is because people overestimate the seriousness of the environmental problem the more it is removed from their locale. This is presumably due to a lack of first-hand experience of the problem, but could just as easily arise due to the differential media attention.

In terms of environmental quality, respondents display the same effect. ANOP Research (1991), Dunlap (1992), Dunlap, Gallup, & Gallup (1993), and Keys Young (1994) found that respondents are generally more likely to rate their local environment most positively, followed by their nation's environment, with the global environment generally rated negatively. Keys Young (1994) found that Australians rated the quality of the world environment least positively compared to the national or local environment, with only 12% rating the world environment as fairly or very good. Seventy nine percent rated the national

environment as fairly or very good, with a similar response for their local environment (81%). Dunlap, Gallup, & Gallup found that respondents in wealthier nations are less likely to rate local environmental conditions as serious. They comment that "citizens living in nations widely acknowledged as having high quality environments are especially likely to perceive the global environment as very poor – in fact, they are well above average in this regard" (1993, p.13).

2.3.5 Concern for Environmental Degradation

In New Zealand, 41% of respondents agree that "almost everything we do in modern life harms the environment" (Gendall, Hosie, & Russell 1994), while the awareness of degradation is high internationally (Dunlap, Gallup, & Gallup 1993).

2.3.6 Economics versus Environment Trade-offs

Wall (1995) states that "the incorporation of a notion of trade-offs into measures of environmental concern by forcing people to choose between environmental quality and other desired goals, such as employment and job security, was seen to provide for a more realistic understanding of determinants of environmental attitudes" (p.299). She suggests that working class people may be more concerned about the economic consequences of giving the environment priority.

However, in 1978 extensive studies of American samples showed that most respondents preferred an improvement of environmental conditions to economic growth (Hays 1987), a finding repeated by Wall (1995) who found that three-quarters of the American public believed the nation should make a major effort to improve environmental quality, even if that meant sacrificing economic growth. Sale & Foner (1993) report a poll which found that 45% of Americans support the idea that protecting the environment is so important that improvements must be made regardless of the costs. Dunlap & Scarce (1991) found an increasing preference in sampled populations for environmental quality over economic growth where the respondents were forced to choose between the options. In 1976, 38% of the sample preferred environmental quality to economic growth, and by 1990 this had increased to 64%. Dunlap, Gallup, & Gallup (1993) found that the percentage of responses favouring environmental protection over economic growth tends to increase with the income level of the nation.

Castles (1992) found that 70% of Australians thought environmental quality and economic growth were equally important. ANOP Research (1991) report similar findings,

commenting that a balanced approach is preferred, with many advocating more development tempered by adequate environmental safeguards. Those who prefer economic growth (7%) are more likely to be older than 25. Those who prefer environmental quality (19%) are more likely to be in the 18-24 year age group, and least likely to be in the 55-64 year age group. In New Zealand, 64% of respondents agree that the government should legislate and use stronger measures to protect the environment even if it hurts economic growth (Gendall, Hosie, & Russell 1994) (see also Section 2.3.7). Memon (1993) comments that New Zealanders are still more interested in economic issues than environmental issues, although he gives no indication of the source of this information.

2.3.7 Government Regulation

Oskamp *et al.* (1991) found that 82% of respondents favour government regulation of environmental problems. For specific problems, Simon (1971) found that 80% of respondents advocate new regulations and stricter enforcement by government for air pollution, while 50% advocate the same for water pollution. The research of Dunlap & Scarce (1991) show that majorities believe governmental regulations do not go far enough, and that there are not enough of them. In addition, they comment that the public sees government as having primary responsibility for environmental protection.

Horsley (1977) comments that although Americans have accepted the environmental crisis as a valid societal and political issue, they have relegated it to government for solution. This is confirmed by the findings of Dunlap, Gallup, & Gallup (1993) who comment that citizens in the low-income nations are more likely to strongly favour a wide range of these government actions than those in high-income nations. Specifically they found that, when they have a choice between government, business and industry, or individual citizens and citizens groups having primary responsibility for protecting the environment, majorities choose government.

An Australian study found overall support for letting the national government set national standards, guidelines, and regulations for environmental protection (ANOP Research 1991). In New Zealand, 68% of respondents believe that the government should take stronger measures to protect the environment even if it interferes with people's rights to make decisions. Seventy-nine percent agree that the government should pass stricter laws, and 88% wanted stronger measures to regulate the environmental effects of businesses (Gendall, Hosie, & Russell 1994). Heylen Research (1992) found that older people are more likely to look to government for guidance in relation to environmental and

conservation issues, rather than leaving it up to the individual. In Wellington, 64% of respondents considered that some sort of restriction should be placed on outdoor recreation activities, primarily because of their affect on the environment (James 1993).

2.3.8. Locus of Control

Most writers define locus of control (LOC), or a variation of it, in terms of two states: internal LOC and external LOC. With regard to environmental concern, LOC is generally considered in relation to environmental activism or environmentally responsible behaviour. Newhouse (1990) defines LOC as an individual's perception of their ability to bring about change through their behaviour. Individuals with internal LOC believe their activities are likely to precipitate change, while individuals with external LOC attribute change to powerful others, for example, God, parents, government, etc. They feel there is little they can do that will be effective. Smith-Sebasto & Fortner (1994) use a similar definition. Dunlap, Gallup, & Gallup (1993) found that barely half the respondents of their international sample believed that individuals could have an effect on solving environmental problems.

Newhouse (1990) suggests that having an internal LOC and a positive attitude towards the environment would have a positive influence on environmentally responsible behaviour. Hamid & Cheng (1995) support this, commenting that "more general beliefs about personal control may be more useful in predicting the likelihood of engaging in specific acts as well as intentions to behave in a generally environmentally friendly manner" (p.684) (see also Section 2.4.7). This suggestion is supported by the results of Hines, Hungerford, & Tomera (1987), Smith-Sebasto & Fortner (1994), and Tucker (1978) who report a positive relationship between some measure of LOC and environmentally responsible behaviour. Arbuthnot (1977) found that an internal LOC predicted recycling behaviour. Schahn & Holzer (1990) use the term 'internal attribution of responsibility', and found that it predicts self-reported actual commitment in a sample of both the general public and environmentalists.

Heylen Research (1992) found that younger New Zealanders were polarised between having heightened concern for the environment and feeling somewhat helpless at the perceived scope of the problem and their lack of skills and knowledge about what to do to help.

Syme, Beven, & Sumner (1993) suggest that environmental activism may be moderated by perceived control or political efficacy. Put more simply, if an individual thinks they will be effective, they will get involved. McStay & Dunlap (1983) and Arcury, Scollay, & Johnson (1987) found that men demonstrate higher levels of public behaviour and active concern, and Mohai (1992) found that men show higher levels of environmental activism. On the basis of these findings, one could be led to expect that men would consider themselves more effective and therefore show higher levels of internal LOC.

2.3.9 Science and Technology

Although the support for NEP beliefs is increasing (see Section 2.1), the expected corresponding decrease in support for the science and technology advocated by DSP beliefs is not always apparent. Martell (1973), however, comments that people "rely on science to understand environmental problems yet are increasingly sceptical about it and see it as part of the problem" (p.133-134). Olsen *et al.* (1992) describe the Technological Social Paradigm which is said to consist of beliefs about the desirability of science and technology, and its efficacy in solving contemporary problems. In support of Martell's comment, they found that men and older people are more likely to hold this social paradigm, but only 7% of people actually ascribe to these beliefs, while 21% weakly support it, and 72% reject it.

However, Dunlap, Gallup, & Gallup (1993) found that respondents actually see government support for scientific research to control pollution as one solution to environmental problems. Indeed, modern environmentalism is increasingly characterised, particularly in the United States, by the deployment of scientific and technical knowledge (Buttel & Taylor 1992). It appears that despite the fact that science and technology were born and developed in a society subscribing to the transcendence of people over nature (White 1967), the science and environmental movement now "exist in a state of mutual dependency and contradiction. At the most general level, the environmental movement depends on persuasive environmental science knowledge claims" (Buttel & Taylor 1992, p.221).

In her study of the New Zealand public's attitudes towards science and technology, Burns (1990) found that although there was a distrust of scientists and a desire to exercise more influence over what they do, all respondents had positive attitudes to science and technology. Although most respondents agreed that science and technology should be supported, they also believed that animals should not be harmed and were sceptical about

the truth of scientific theories. Women had stronger views in this regard, and were more concerned than men about the negative impacts of science and technology.

2.4 The Environmentally Concerned Individual

Van Liere & Dunlap (1980), in their review of studies of environmental concern, summarise that most associations between sociodemographic variables and environmental concern are tentative and modest. They conclude, as does Wall (1995), that concern is widespread and not typically associated with any one group of people. However, the findings described below give an indication of what characteristics one might expect to find in an individual concerned about the environment.

2.4.1 Age

Most studies tend to show that age is negatively related to environmental concern although the results are inconclusive (Van Liere & Dunlap 1980). That younger people are more likely to be concerned about the environment or hold positive environmental attitudes is supported by the results of ANOP Research (1991), Arcury (1990), Caro & Ewert (1995), Dunlap & Van Liere (1978), Heylen Research (1992), Keys Young (1994), Tognacci *et al.* (1972), Tucker (1978), and Van Liere & Dunlap (1981). Caro & Ewert (1995) suggest that the reason for this relationship may be that as people grow older, environmental concerns are replaced with other more salient concerns such as health and the economy. In addition, Wall (1995) found that age was not as important as education in influencing environmental concern, and suggested that this was due to the widespread availability of information in all forms of media.

In New Zealand, Heylen Research (1992) found that older people are more likely to focus on unemployment and standards-of-living issues, while younger people are more likely to express concern for conservation and the environment. In addition, younger people display a higher level of concern across all attitudes and issues.

Schahn & Holzer (1990) found that environmentalists were younger, while Freudenberg (1991) found that younger people were less supportive of local development, were more mistrustful of industry, and were less opposed to governmental environmental regulations. Castles (1992) found that age did not influence environmental concern of Australians up to the age of 54, while people in the 55+ age groups were less concerned. Keys Young (1994) found that Australians in the 15-24 and 25-34 age groups were more

likely to mention the environment in response to MIP questions. The exception to these studies were Gooch (1995) who found an inconsistent correlation between age and the support of NEP beliefs, and Arcury & Christianson (1993) who found a positive correlation between age and support for NEP beliefs.

With regard to environmentally responsible behaviour, the relationship seems less clear. Lansana (1992) found that people who recycled were older (40-64 years) than those who did not, as did Arbuthnot (1977) and Vining & Ebreo (1990). Lansana suggests that this may be due to the fact that homeowners tend to be older, and that homeowners are more likely to recycle than those people who rent. Hines, Hungerford, & Tomera (1987) found that the relationship between youth and the reporting of environmentally responsible behaviours was only slight. However Oskamp *et al.* (1991) found that as age decreased, the motives to recycle became stronger.

2.4.2 Education

The relationship between education and environmental concern is one of the few which demonstrated a consistently positive, moderate association (Van Liere & Dunlap 1980). The findings reported below support this for different aspects of environmental concern, attitudes, and behaviour.

Arcury (1990) and Arcury & Christianson (1993) found that the better educated people are, the more likely they are to hold positive environmental attitudes and have high levels of environmental knowledge. Oskamp *et al.* (1991) reports that as education increased, pro-ecology attitudes increased, and the denial of environmental problems decreased. The positive relationship between environmental concern and education is also supported by ANOP Research (1991), Arcury (1990), Arcury & Christianson (1993), Castles (1992), Dunlap & Van Liere (1978), Keys Young (1994), Martell (1973) Tognacci *et al.* (1972), Van Liere & Dunlap (1981), and Wall (1995). Gooch (1995) found a positive correlation between education and support for NEP beliefs, while Waghorne (1977) found that New Zealand interviewees described the members of their environmental groups as having "above average" or professional qualifications.

Wall (1995) considers that those with higher education would be more likely to understand and retain information about environmental problems. The results of Arcury (1990), Arcury & Johnson (1987) and Arcury, Scollay & Johnson (1987) seem to support this, as they found a positive relationship between education and environmental knowledge.

The relationship between education and environmentally responsible behaviour is less certain. Simon (1971) found that better educated respondents were more likely to perceive environmental problems as more serious. Some studies have found that the relationship between education and environmentally responsible behaviour is slight at best (Hines, Hungerford, & Tomera 1987). Others have found a positive relationship between education and recycling (Arbuthnot 1977, Lansana 1992).

2.4.3 Ethnicity

Little has been written about the effect of the ethnic background of an individual on levels of environmental concern. One would imagine that the different cultures would hold, with differing degrees of strength, to variations of the NEP, HEP, and DSP. However the results of Dunlap, Gallup, & Gallup (1993) did not indicate any difference between Asian nations and European nations in their levels of environmental concern. The research of Caro & Ewert (1995) shows that acculturation does effect environmental concerns such that, increasingly over time, foreign-raised people will take on the level of concern of the country in which they are resident. They go on the suggest that class, or an individual's perception of their social status, is a better predictor of environmental concern than ethnicity because the latter is not necessarily based on any distinct cultural background. However, in their Australian study, Keys Young (1994) found that respondents from non-English speaking backgrounds were less knowledgeable and less concerned about the environment.

With regard to this research, since any individuals with a foreign ethnic identity responding to this questionnaire will be emersed to some extent in the New Zealand culture, it seems reasonable to assume that over time they will begin to take on the environmental attitudes of the New Zealand culture. However, since the sample population is first- and second-year classes (see Section 3.4) any foreign-raised respondents will only have been resident in New Zealand for, at most, a few years, and may therefore show a difference in the levels of environmental concern.

2.4.4 Gender

The argument for differences in the environmental concern and attitudes of men and women stem from theories on the effects of socialisation. Arcury, Scollay, & Johnson (1987), McStay & Dunlap (1983), and Mohai (1992) argue that men are socialised differently from women. Men are purported to be socialised to have "unecological attitudes" such as the traits of rationality and competitiveness. They are supposed to aspire

to accumulation and active mastery of their environment, particularly through scientific and technological problem-solving. This position is solidified by men's command of techno-scientific institutions, and other positions that "reward a "market-place mentality" which values economic growth and sees nature as a means to obtain such growth" (McStay & Dunlap 1983, p.292) regardless of the environmental costs.

Women, on the other hand, are supposed to be socialised as nurturers who are ecologically benign and less inclined towards technically controlling nature. Women are less likely to be employed in influential positions in economic, political, and scientific or technical institutions making them less committed to growth which compromises the environment (McStay & Dunlap 1983). In addition, women are more likely to be employed in maintenance jobs which reflect cultural attitudes towards women as carers (Salleh 1993). On this basis, women were expected to be more concerned about the environment but have a lower level of environmental knowledge.

This was supported to some extent by the research of Arcury (1990), Arcury & Christianson (1993), Arcury & Johnson (1987), Arcury, Scollay, & Johnson (1987), Keys Young (1994) and Schahn & Holzer (1990) who found that men have higher levels of concrete knowledge of environmental problems which was not due to education levels. However, the latter study found that women scored higher on affect, verbal commitment, and self-reported actual commitment than men did. This combined to make being female as a predictor variable for self-reported actual commitment in a sample of the general public.

While Arcury, Scollay, & Johnson (1987) found no difference between the environmental concern of men and women, ANOP Research (1991), Colmar Brunton (1993), McStay & Dunlap (1983), Mohai (1992), Ray (1975), Van Liere & Dunlap (1980, 1981) and Waghorne (1977) found that women were more concerned about the environment with differing degrees of strength of association. Specifically women were especially concerned about local environmental issues, and all issues of perceived severity and perceived future shortages (Mohai 1992). ANOP Research (1991) found that women, especially mothers, are more likely to choose the environment in MIP questions. In reading newspaper articles, a poll found that women were more likely than men to be interested in reading about environmental issues (Herald 1995).

Waghorne (1977) found that women in the environmental movement were more likely to be pro-nature on a nature-humans continuum, a finding supported by Colmar

Brunton (1993) who found that New Zealand women are the most environmentally aware, interested, and active group, while Heylen Research (1992a) found that women are more likely than men to be concerned about endangered species, water pollution, and the needs of future generations. Freudenberg & Steinsapir (1992) comment that the members of local, specific-issue groups are disproportionately women, particularly housewives and mothers, who emerge when they feel that the health of their families and community is at stake. In spite of this, however, women consistently score lower for all measures of activism (Arcury, Scollay, & Johnson 1987, McStay & Dunlap 1983, Mohai 1992).

With regard to environmental behaviour, Schahn & Holzer (1990) comment that "gender differences will be more likely where a differential familiarity with a task can be established" (p.778). They went on to suggest that women would show more positive environmental attitudes, especially towards environmentally responsible behaviour, because most questions of what is environmentally appropriate behaviour arise in the course of housework which women do more often. This was supported by the results of their study which found that women demonstrate higher levels of concern in all areas of topical environmental concern related to household behaviour, for example, recycling, energy conservation, etc.

The theory of gender differences due to differential familiarity is not supported by Mohai (1992) who found that the differences between men and women remain regardless of whether the women are homemakers or not. Perhaps more telling though, was the meta-analysis of Hines, Hungerford, & Tomera (1987) who found no relationship between gender and environmentally responsible behaviour.

2.4.5 Knowledge

Arcury & Johnson (1987) and Maloney & Ward (1973) comment that, in general, although awareness of environmental problems is high, environmental knowledge is low. Despite this, knowledge does seems to influence both environmental behaviour and attitudes. Arcury (1990) and Ramsey & Rickson (1976) conclude that environmental attitudes and knowledge are directly and positively related, while Hamid & Cheng (1995) found that the relationship between the two is mixed but not strong.

Ramsey & Rickson (1976) suggest that elementary knowledge leads to attitudes, which in turn motivate the individual to learn more, and so on. They suggest that an increase in knowledge is considered more likely to lead to 'favourability' towards the

environment, rather than 'passionate interest' (see Section 2.1.1). McIntosh (1990), on the other hand, suggests that while information allows people to better articulate their views, it does not necessarily determine what those views will be. Hamid & Cheng (1995) indicate that attitudes develop from beliefs rather than knowledge, which suggests that misconceptions about the existence, seriousness or magnitude of environmental problems could affect attitudes to the environment. Syme, Beven, & Sumner (1993) found that increased knowledge of environmental issues leads to an increased assessment of a problem, which in turn leads to increased arousal and predicts reported behaviour (see also Section 2.4.7).

The meta-analysis performed by Hines, Hungerford, & Tomera (1987) indicates that greater knowledge of issues, or how to take action on those issues, leads to an increase in engaging in responsible environmental behaviours. This is supported by the research of Vining & Ebreo (1990) who found that recyclers have more knowledge of recycling than non-recyclers.

With respect to ecological knowledge, Munson (1974) found that students carry misconceptions about basic features of ecology, which Corral-Verdugo (1993) labelled environmental myths. Munson (1974) mentions, among others, the misguided concept of ecosystems as limitless resources, and some species within the system as having more importance than others. In addition, he found a lack of understanding of the fundamental interdependence of species. He concludes that these misconceptions are stable and resistant to change. Horsley (1977) draws a similar conclusion, commenting that the lack of change in student environmental behaviour could be attributed in part to "the ignorance or lack of acceptance of the position of man (sic), his culture, and the natural environment as one operating interdependent community...[that are] systematically harmed when one member was degraded" (p.352).

2.4.6 Rural-Urban Differences

In general, most studies found that urban residence is positively associated with environmental concern or attitudes (ANOP Research 1991, Albrecht *et al.* 1987, Arcury 1990, Freudenberg 1991, Lowe & Pinhey 1982, Van Liere & Dunlap 1980, 1981, Wall 1995). Lowe & Pinhey (1982) suggest that this may be because urban residents are usually exposed to more degradation and pollution than their rural counterparts, an idea supported by Memon (1993) for New Zealanders. Freudenberg (1991) took a different tack, and suggests that rural residents have a more utilitarian focus and urban residents a recreational

and appreciative focus towards the environment, which would influence their respective levels of environmental concern.

Lowe & Pinhey (1982) hypothesised that the place of socialisation would determine the level of environmental concern, and found that as the size of the place of socialisation increased, environmental concern increased even when age, education, and gender were controlled for. Interestingly, the size of the place of residence was not related to environmental concern. Size of place was also important in Erskine's (1972) study although in the opposite direction. She found that suburban residents seem to be more aroused about the environment than big city residents. Van Liere & Dunlap (1980) found that this relationship was more pronounced when local environmental concerns were specified, as opposed to national or global issues, while Simon (1971) reported no difference in perception of pollution as a problem between rural and urban respondents.

In New Zealand, Heylen Research (1992) found that people who live in smaller towns and cities are more likely to focus on economic and unemployment issues, while those who live in larger cities, particularly the greater Auckland region, express a much higher concern for conservation and the environment.

2.4.7 The Attitude-Behaviour Relationship

Maloney & Ward (1973) suggest that environmental problems are not so much a technical problem as a crisis of maladaptive behaviour, and ultimately all research into environmental attitudes must confront the issue of how those attitudes affect behaviour. If an individual can somehow be influenced to exhibit more positive attitudes towards the environment, will this lead to an increase in their motivation, ability, and desire to perform environmentally responsible behaviours?

Although it seems intuitively appropriate to suggest that positive environmental attitudes will lead to environmentally responsible behaviours, studies have shown that the relationship between the two is confused. O'Riordan (1989) comments that attitudes rarely provide a guide to actions toward nature, and suggests that, despite the theories of cognitive dissonance (see below), some kind of schizophrenia exists. Oskamp *et al.* (1991) state that "[e]nvironmental attitudes and environmental behaviours constitute a disparate set of only slightly related factors" (p.508), a finding supported by a New Zealand study (McIntosh 1990). ANOP Research (1991) conclude that while most evidence points to behaviour preceding attitude change, only modest behavioural change has accompanied a

huge change in attitudes toward the environment and a recognition that more needs to be done, a conclusion also drawn by Dunlap (1992). However, Hamid & Cheng (1995) suggest that attitudes, which develop from beliefs, lead to behavioural intentions, which lead to behaviour. Subjective norms, the perception of the ease of performing the behaviour, and past behaviour are also suggested to interact and influence environmental behaviours, although the strength of the influence of each would depend on the situation, the particular behaviour, and individual differences (Hamid & Cheng 1995).

Horsley (1977) postulates the influence of cognitive dissonance in changing behaviour. He comments that cognitive dissonance forces the individual to reduce dissonance regarding environmental issues by changing beliefs about the degraded state of the environment, or the priorities of societal issues. He suggests this leads to a change in attitudes towards the environment, which may lead to a change in behaviour. Hamid & Cheng (1995) also seem to suggest some influence of cognitive dissonance when they suggest that there is support for the fact that people desire to attain a general and a specific consistency between their attitudes and their behaviours, and vice versa.

The level of specificity seems of most importance in the actual measurement of any correlation between environmental behaviour and attitudes. Cary (1993) suggests that environmental attitudes will be able to predict environmentally responsible behaviours accurately if the measurement of both is scaled at the same level of specificity.

Bickman (1972) also found a wide disparity between expressed commitment to the environment and actual behaviour. In their meta-analysis, Hines, Hungerford, & Tomera (1987) found, on the other hand, that positive attitudes towards the environment are positively related to taking environmental action. Lounsbury & Tornatzky (1977) found that concern for environmental degradation and environmental action is positively correlated with household behaviours to maintain environmental quality even though verbal commitment is higher than behavioural commitment.

Schahn & Holzer (1990) found that the perceived severity of environmental problems and knowledge of environmentally responsible actions are predictor variables for self-reported actual commitment for a sample of both environmentalists and the general public. Syme, Beven, & Sumner (1993) report similar results, finding that reported behaviour is predicted by arousal, which is influenced by increased knowledge, which increases the assessment of a problem. McIntosh (1990) reports studies which found that

the perception of seriousness of the problem of energy consumption influences energy conservation.

2.4.8 The Business Community

Shetzer, Stackman, & Moore (1991) found that, although prior research in 1971 and 1981 had shown a shift towards materialistic priorities, pro-environmental attitudes were filtering into the business community, fostering the growth of the 'green capitalist' philosophy. Using a Business-Environment Scale, they also found a strong pro-environmental stance in undergraduate business students, in addition to a high level of endorsement for the NEP.

2.5 Summary

In sum, the results of the studies reviewed above can allow a tentative prediction of the characteristics of the environmentally concerned individuals. We can safely expect the majority of the sample to be in favour of environmental protection and maintaining environmental quality. They will be very concerned, and quite aware of the problems, though not passionately interested or particularly knowledgable. They will tend to support the beliefs of the NEP, although they may show ambivalence towards science and technology. Even though they will prefer to choose environmental quality over economic growth if forced to make a trade-off, they may still view protecting the environment as something of a luxury. More salient concerns, such as the state of the economy and social unrest, will tend to take priority over environmental concerns. The environmental issues of interest will be mainly pollution-related problems, particularly water and air pollution, and ozone depletion will dominate their global concerns.

They will tend to perceive the quality of local environments more positively than distant environments, but be concerned for environmental degradation generally. They will prefer to delegate the responsibility for regulation and control of environmental problems to government. They will tend to be young, well educated, and raised in urban areas, although the effects of the first two characteristics may be attenuated by the skewed nature of this sample (see Section 4.1). Women may be more concerned about the environment, and more concerned about the negative impacts of science and technology but men will tend to be more knowledgable, and may exhibit higher levels of internal locus of control. There is

not expected to be a significant difference between foreign-raised or foreign-ethnic and New Zealand-raised or -ethnic respondents in their levels of environmental concern.

CHAPTER 3

Method

A survey of Commerce students at the University of Canterbury was undertaken in September and October 1995 to measure environmental attitudes, assumptions, and beliefs. The aim of the data collection was to gather information on variables measuring different aspects of environmental attitudes, and a self-administered survey was the method chosen to achieve this.

This chapter will describe the methods used to measure the environmental concern of the sample population. It will detail the design of each section of the questionnaire, as well as its testing, organisation, wording, administration, and response rate. The selection of the survey population will also be described, in addition to a brief overview of certain events that may have had an effect on survey responses.

3.1 Questionnaire Design

A questionnaire was chosen as the method of data collection because the aim of this research was to describe the attitudes of the sample population (see Section 1.2). Questionnaires are a relatively easy, quick, and structured way to obtain such information (de Vaus 1985), and can be conducted on a fairly large scale to analyse the relationships between certain variables (Oppenheim 1966). Questionnaires also allow the comparison of the responses of groups of respondents with particular characteristics (de Vaus 1985). These features met the requirements of this study. In addition, questionnaires were chosen as the method of survey in preference to interviews due to time constraints.

Within the environmental concern literature, there have been problems with the limited ability of researchers to explain the variance in environmental attitudes with demographic and socioeconomic variables (Van Liere & Dunlap 1980, Wall 1995). This has resulted in widespread calls to remedy this problem by focusing on attitudes to local environmental issues and responses to local environmental problems rather than "abstract and hypothetical measures of general environmental concern" (Van Liere & Dunlap 1980, Wall 1995) as this study will do. The decision by the researcher to use general rather than specific and local measures of concern was made on the assumption that the University of

Canterbury population contains a high proportion of non-local and foreign students, for whom the local issues would be little known. This, then, limits the degree to which the influences of demographic variables can be attributed, in addition to limiting the extent to which the issues which provoke environmental concern can be defined.

The questionnaire (see Appendix 1) consisted of three main sections: Section I-Introductory Questions, Section II-Main Survey, and Section III-Personal Details. The questionnaire was headed by a letter introducing the researcher and stating the purpose of the study. Confidentiality was assured, and an opportunity given to obtain a copy of the results if desired. The respondents were urged to answer all questions and use their own answers.

3.1.1 Section I

The initial questions of this section assumed no prior knowledge of the questionnaire's content. They were designed to gauge how important environmental problems were to the respondent (2 items), what environmental problems were salient (1 item), their stated level of concern (1 item), and how they perceived the quality of the natural environment (3 items). These questions were either designed by the researcher or derived from published studies. [6]

3.1.2 Section II

The main body of the questionnaire consisted of statements to which there was a five-point response scale ranging from strongly agree to strongly disagree, with a neutral midpoint and a 'don't know' option. Specific statements were collated from published studies (see Footnote 6) on environmental attitudes to give a total of 110 items in 15 categories. These included the NEP categories of Balance of Nature, Humans Over Nature, and Limits To Growth. The other categories were Urbanism, Pastoralism, Technocentrism, Legalism, Environmental Powerlessness, Economics, Time Orientation, Concern for Environmental Degradation, Environmental Concern, Scarcity Awareness, Education, and Environmental Resilience. Each category consisted of items designed to measure different aspects of environmental attitudes and concern, and are described in greater detail in Section 4.3.

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[6] These published studies include: Albrecht *et al.* (1982), Arcury (1990), Berberoglu & Tosunoglu (1955), Castles (1992), Dunlap & Scarce (1991), Dunlap & Van Liere (1978), Erskine (1972), Gigliotti (1992), Heylen Research (1992), Kuhn & Jackson (1989), Lounsbury & Tornatzky (1977), McKechnie (1977), Ray (1975), Simon (1971), and Weigel & Weigel (1978).

Van Liere & Dunlap (1981) found that concern about pollution and natural resources tap similar aspects of environmental concern, and the items in Concern for Environmental Degradation, Scarcity Awareness, Environmental Concern, and the NEP variables were chosen to reflect this. Items considered unsuitable for the sample population in terms of language, content, or context were eliminated to give a total of 46 items. For example, many items referred to environmental issues or problems specific to the United States or Europe, such as acid rain, which would have been inappropriate for New Zealand respondents. Other items were too specific in their focus on issues rather than measuring general attitudes of environmental concern.

In addition, 22 items in 3 categories were added to measure aspects not normally considered in environmental attitude literature. One of these categories, Ecological Concepts, included statements regarding ecological reality as expressed by Barry Commoner (The Royal Commission on Social Policy 1988). The second category, Assumptions, also derived from The Royal Commission on Social Policy's April Report (1988), included statements regarding assumptions about human technological capabilities. The final extra category, Gender Perception, included statements about gender perceptions with regard to environmental attitudes. This gave a total of 68 items to be included in the preliminary questionnaire for the pilot study (see Section 3.3).

The value of these three categories is limited by the fact that no attempt has been made by the researcher to develop operational definitions of the key concepts of each item. The items were expected to be taken at face value by respondents, and, therefore, could suffer from low reliability if each respondent interpreted each statement differently. However, none of the statements in these categories were included in the first group of statements of the questionnaire, and most were in the middle of the questionnaire. Respondents were, therefore, assumed to interpret these statements in the context of the surrounding questionnaire statements. Internal reliability of variables is discussed in Section 4.5.2.

3.1.3 Section III

This section consisted of 11 questions requesting personal details of the respondent, as well as providing an opportunity for comment. In addition to questions on age and gender, details about where the respondent spent most of their childhood and their level of education were requested. These questions were included to obtain details about the

respondents in order to categorise subgroups of respondents. These subgroups could then be used to assess the extent to which these variables influence the types of responses given.

3.2 Item Organisation, Scoring, and Wording

The items were numbered and then ordered randomly using a random number table and a pair of dice to indicate the starting point. However, where items from the same category were placed together and this would be obvious to the respondent, the second item was ignored until it occurred again randomly.

Approximately half the statements were framed negatively and half positively with regard to environmental concern to avoid the "halo effect" described by Oppenheim (1966). If all the questions are framed the same way, "the respondent - having once made up his mind that he is favorably disposed towards the object of the ratings - may run down the page always [ticking] a position on the left or vice versa without actually reading the items or giving each of them separate thought" (Oppenheim 1966, p. 85).

Born & Wieters (1978) commented that most instruments convey clearly to the respondent what the researcher is attempting to measure. To the extent that the respondents can identify the object of measurement (that is environmental attitudes) and judge the social desirability of taking a particular stance in relation to those attitudes, regardless of anonymity, they may respond in a way which makes the identification of real environmental attitude changes very problematic (Born & Wieters 1978). To counteract this to some extent, each item was randomly assigned a positive or negative format.

The responses to positive items were scored 1 for strong agreement, 2 for agreement, 3 for 'neither agree nor disagree', 4 for disagreement, and 5 for strong disagreement. The responses to negative items were reversed with 1 for strong disagreement through to 5 for strong agreement. A low score therefore, would indicate strong support or concern for the environment, while a high score would indicate a lack of support or concern for the environment (see Section 4.4).

Consistency of wording was checked periodically throughout the process of questionnaire design. The terms 'humans', 'man', and 'mankind' were changed to 'people'. Except in the Ecological Concepts category, any reference to the environment or nature was changed to 'natural environment'. 'Economic growth' replaced 'the economy',

'development', or 'growth'. However, it is important to note that the style and wording of questions varies both within the literature, and between this questionnaire and others. Comparison of the results, therefore, is at best suggestive rather than indicative.

3.3 Pilot Study

The pilot survey was administered to Environmental Sociology and Environmental Science students who were told the purpose of the survey and asked to comment on items they felt should be excluded or included. These students were assumed, by their choice of class, to have pro-environmental attitudes, or at least to have a basic awareness of environmental issues. Questions eliciting inconsistent patterns of response could be eliminated, however none were excluded from the final questionnaire for this reason. Other items were eliminated as described below.

The Gender Perception category was reduced from 13 to 3 items as comments indicated that these items were very repetitive. The Assumption and Ecological Concept categories were not changed. The remaining 46 items in 15 categories were reduced to 25 items in 12 categories to eliminate repetitive items, based on the respondents' comments. As a result, the categories of Pastoralism and Environmental Resilience were eliminated. In addition, the single item in the Education variable was eliminated because it was considered by the researcher to be inconsistent with the focus of other variables, and did not appear to measure an aspect of environmental concern. However, most categories still consisted of multiple items to increase reliability (Oppenheim 1966). At this stage some items were selected in preference to others because of their use in published studies which would allow comparison.

3.4 Survey Population

The University of Canterbury student population were selected for this study due to their accessibility. Enrolment information indicated that of all the faculties, Commerce and Law had approximately even gender ratios at first year level, while Commerce and Fine Arts had even gender ratios over all years. On this basis, and due to the fact that it is numerically larger than both Law and Fine Arts, the Commerce faculty was selected as the target population for the survey. The gender proportions were important in the selection of

potential target populations because gender was initially intended to be the primary variable of concern when analysing the questionnaire data for differences in responses.

After taking into account students enrolled in more than one of the classes to be sampled, the number of potential respondents was 956, of which 611 were students enrolled in 100-level classes. Two 100-level and six 200-level classes, which incorporated the core classes of the Commerce faculty, were selected from the Department of Accountancy, Finance, and Information Systems.

3.5 Questionnaire Administration and Response Rate

The questionnaire was self-administered and, as such, the instructions were designed to be self explanatory and easy to follow. Questionnaires were distributed at the beginning of class, at which time a short announcement was made by the researcher. The announcement informed the class that the questionnaire was being undertaken as part of a Master's thesis, and that it asked them questions about their attitudes to certain issues (but not *which* issues) and the strength of those attitudes. They were assured that their personal details would remain confidential, and urged to complete all the questions. Finally the class was told when the questionnaire would be collected, and appreciation was expressed in advance for their participation.

In classes of two hours or more, where it was usual to take a mid-class break and the lecturer was amenable, the questionnaire was completed during the break and collected at the conclusion of the class. In most classes, however, the questionnaire was handed out at the beginning of class and collected at the beginning of a subsequent class.

Of the 956 potential respondents, the actual number of questionnaires handed out was 645 indicating a high level of absenteeism. The final number of questionnaires collected was 287, of which 4 were discarded due to inappropriate or insufficient responses. This was a useable response rate of 43.8%. It is pertinent to note that because response to the questionnaire was essentially voluntary, the respondents are self-selected. The non-responders may represent a subgroup which systematically avoids being sampled (Oppenheim 1966), and therefore these results should be interpreted with caution. In addition, a bias against those who were absent from class may also represent a subgroup with particular characteristics that have not been represented in these results. This

population was not randomly selected nor representative of the New Zealand public, but was selected for its availability, relative size, and even gender ratio.

3.6 Timing in Relation to Prominent Events

The questionnaire was administered to the students over a period of three weeks from September to October 1995. It was prior to this period that France informed the world of its intention to conduct a series of nuclear tests at Moruroa Atoll. As described earlier, this attracted an immense amount of media attention and protest action, particularly by the well-known environmental group, Greenpeace. This protest action was both highly visible and actively supported by actions of the New Zealand public in the forms of the peace flotilla, petitions, and protest marches. The first nuclear test was exploded on September 5, 1995, and the second on October 2, 1995. This is suggested in the results reported in Section 4.2.

CHAPTER 4

Results

The aim of the data analysis was to describe the features of environmental concern, and to determine what characteristics define an environmentally concerned individual. The data was also used to gain an overview of how concerned the sample population was about environmental issues, and the extent to which they were regarded as important. The data was processed using the statistics package SPSS for Windows.

This chapter is divided into four main sections. The first describes the characteristics of the sample population in terms of how they were categorised into certain demographic variables. The second and third sections describe Sections I and II of the survey using descriptive statistics to show how the respondents answered the questions. The fourth section, Statistical Tests, describes the tests used and the influence of demographic variables on the response given to particular questions or variables.

Please note that, except where its inclusion is relevant, the 'Don't Know' response was recoded as a 'missing' response.

4.1 Descriptive Statistics: Population Characteristics

4.1.1 Age

The average age of this sample population was 21.8 years, with the youngest at 17 years and the oldest at 64 years. The modal age was 19, comprising 23% of the population. Age was recoded into age groups so that age corresponded approximately with years of enrolment. This resulted in five age groups: 17-18 years, 19-20 years, 21-22 years, 23-29 years, and 30+ years.

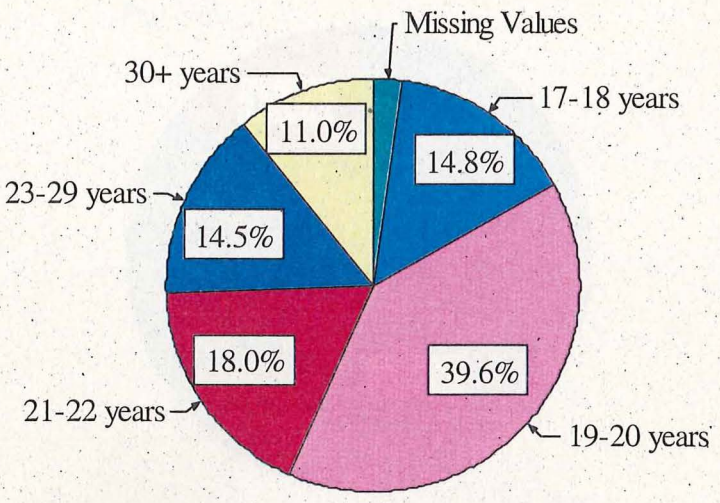


Figure 1: Age Groups of Respondents

4.1.2 Years of Enrolment and Status

The mean number of years of enrolment at a University was 2.4 years, with a range of 1 to 26 years. The majority (35.3%) of the population were in their first year of University with 29% in their second year. 85.9% of the respondents were full-time students, and the remainder were part-time students.

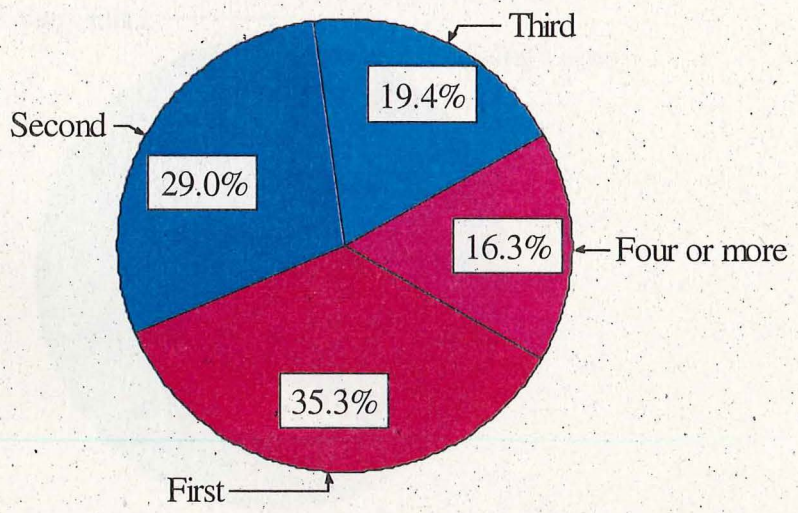


Figure 2: Years of Enrolment of Respondents

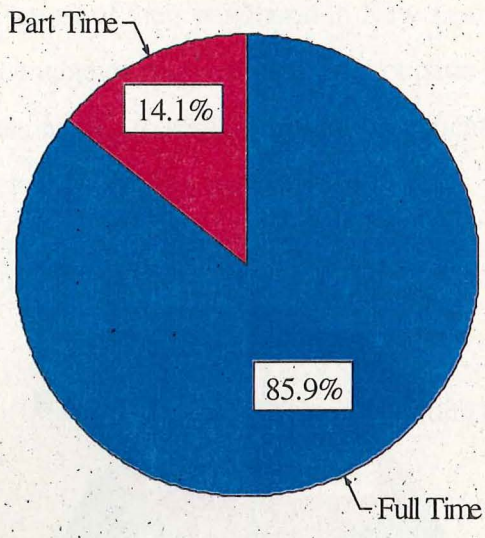


Figure 3: Enrolment Status of Respondents

4.1.3 Country of Childhood and Ethnic Identity

86.2% of the population spent most of their childhood in New Zealand, and 83% considered themselves to be New Zealanders or New Zealand European/Pakeha. Interestingly, 5.7% of those raised in New Zealand considered themselves to have a foreign ethnic identity, and 15.4% of those raised overseas considered themselves to have a New Zealand ethnic identity. Of those with a foreign ethnic identity, two-thirds were Asian, principally Chinese, while around one-fifth were European.

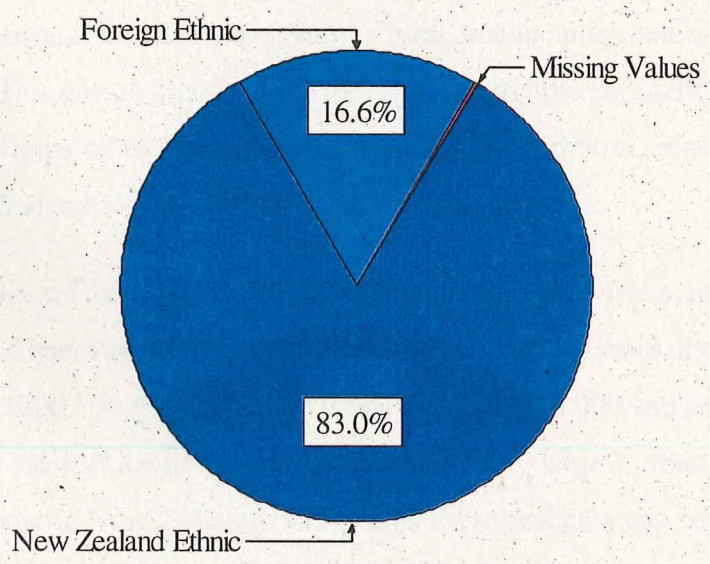


Figure 4: Ethnic Identity of Respondents

4.1.4 Region of Childhood

Of those who spent most of their childhood in New Zealand, 16.2% originated from the North Island. The percentage of respondents raised outside New Zealand is lower in this chart than the previous one due to some respondents indicating that part of their childhood was spent in New Zealand and part overseas.

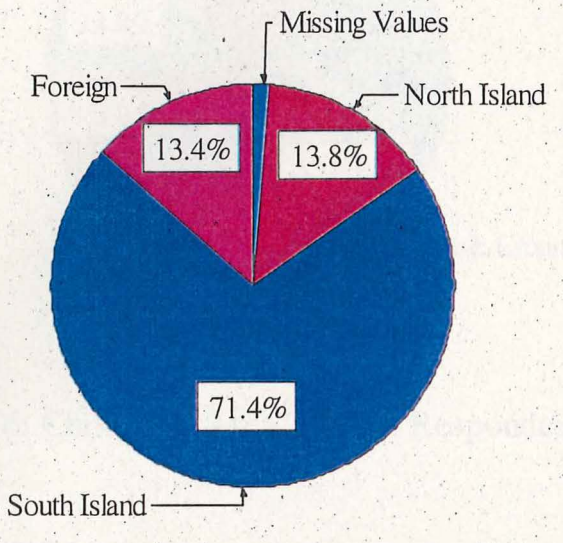


Figure 5: Region of Childhood of Respondents

4.1.5 Area Type

Respondents were asked to indicate whether they had spent most of their childhood in a rural, small urban, or large urban area, and to include the name of the town or city. According to Statistics New Zealand (1995), a rural area includes communities of under 1000 residents. This category comprised 16.2% of the sample population, which is not dissimilar to the figure of 15.0% of New Zealanders living in rural areas at the 1991 census (Statistics New Zealand 1995).

On the basis of the Statistics New Zealand definition of urban, respondents who indicated they had spent most of their childhood in urban areas were divided into small urban centres of 1000 - 39 999, and large urban centres of 40 000 and over. This division was made on the basis of the list of New Zealand's twenty largest urban centres as at the 1991 census (Statistics New Zealand 1995). This list indicated a gap between smaller centres with populations peaking at around 32 000, and larger centres with populations beginning at around 42 000. Using this definition, those raised in small urban centres comprised 22.8% of the sample population, while those raised in large urban centres made

up the remaining 61.0%. Over a third of all respondents spent most of their childhood in Christchurch.

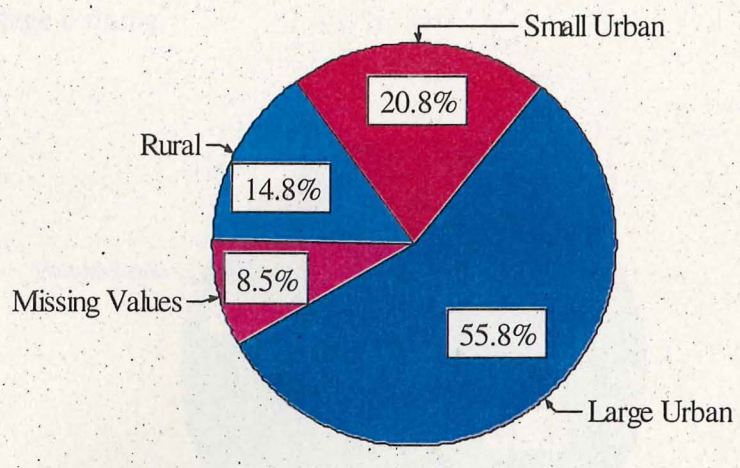


Figure 6: Childhood Area Type of Respondents

4.1.6 Marital Status

Most (78.4%) of the respondents were single, while 18.4% described themselves as married or living with their partner.

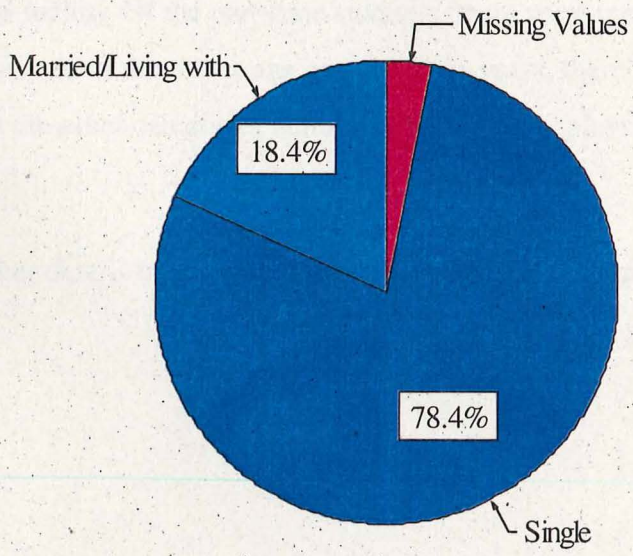


Figure 7: Marital Status of Respondents

4.1.7 Qualifications

Most (84.5%) of the respondents were undergraduates who did not have previous qualifications. However, 10.2% of respondents were post-graduates with a Bachelors, Masters, or Ph.D. degree, and 5.3% had other qualifications such as a Trade Certificate or Teachers College training.

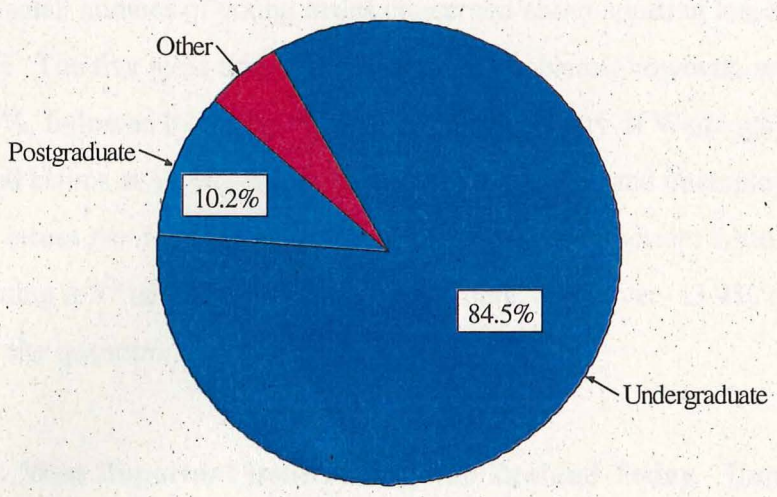


Figure 8: Qualifications Held by Respondents

4.1.8 Gender

The gender ratio of the sample population was somewhat more even than that indicated by University statistics for the Commerce faculty, with 48.8% of respondents female and 51.2% male. Of those respondents raised overseas, there were almost twice as many females as males. Of the part-time students, there were more than twice as many females as males, and in the oldest age group of 30+ years, there were also more females than males. All the other categories within the variables displayed relatively even gender ratios.

For further details on the relationships between demographic variables, please refer to Appendix 2.

4.2 Descriptive Statistics: Section I

The introductory questions of the questionnaire produced some interesting results. The first question asked was which problem or issue the respondent thought was the most important in New Zealand today. The response to this varied widely as shown in Table 1, and included a small number of young males concerned about sporting losses regarding the Ranfurly Shield. The five most frequently mentioned problems, however, were racial tension at 19.6%, followed by nuclear testing at 13.1%, Treaty of Waitangi/Maori sovereignty/land claims at 11.0%, violence and crime at 9.8%, and unemployment at 9.4%. Environmental issues *per se* were only regarded as the most important issue by 6.5% of respondents, rating it 8th of the 12 categories listed here. However, 13.4% of respondents did not answer the question.

Table 1: Most Important Issue Facing New Zealand Today - Unprompted

Most Important Issue	Number of Responses	Valid Percentage
Racial Tension	48	19.6
Nuclear Testing	32	13.1
Treaty of Waitangi/Maori Sovereignty/Land Claims	27	11.0
Violence/Crime	24	9.8
Unemployment	23	9.4
Education/Health/Welfare Issues	19	7.8
Economic Instability	17	6.9
Environment	16	6.5
Moral/Ethical Issues	13	5.3
Political Instability/MMP	9	3.6
Rich/Poor Division	6	2.5
Relationship/Family Breakdowns	5	2.0
Other	6	2.1
Total	**245**	**100.0**
Missing	38	

The differences in the responses given by particular subgroups are described in Section 4.6.1.

In response to Question 2, only 4.3% of respondents rated environmental problems as the 'most important issue' facing New Zealand. Note that this figure is lower than the 6.5% of respondents who chose 'environment' as the most important issue facing New Zealand in Question 1. This discrepancy may indicate that around 2% of respondents read the questionnaire prior to completing it, thus influencing their choice of answer.

However, 64.5% of respondents rated environmental problems as a 'very important issue', and 25.4% as a 'quite important issue', while 5.0% rated environmental issues as a 'less important issue', and 0.7% as a 'not at all important issue'. On a scale of 1 to 5, 'most important' to 'not at all important', the mean response was 2.33, indicating that, while environmental issues were not unimportant to these respondents, they were not of extreme importance either.

When this response is compared to that for Question 1, perhaps the most interesting point is that of those respondents who cited nuclear testing as the most important problem, only 6.1% rated environmental problems as the 'most important issue' in New Zealand. The majority of those concerned about nuclear testing considered environmental issues to be very or quite important, 87.8%, but not the most important issue. This indicates some ambiguity about the nuclear issue as an environmental issue despite the fact that the anti-nuclear campaign is perhaps most visibly supported by overtly pro-environmental groups such as Greenpeace.

Respondents were asked in Question 3 to indicate the first three *environmental* problems that came to mind, and again the responses varied widely. These responses were categorised as shown in Table 2. The most frequently mentioned problem was ozone depletion at 15.5%, followed by pollution in general at 13.0%, and nuclear testing/waste at 10.4%.

To get an indication of how they view their environment, respondents were asked (Question 4 a, b, c) to rate the quality of the natural environment in each of three settings: the world; New Zealand; and Canterbury. On average, the respondents viewed the world environment negatively on a scale of 'very good' to 'very bad' (1-5), with a mean of 3.52. Most respondents, 49.1%, gave the world environment a rating of 'bad', and a further 9.1%

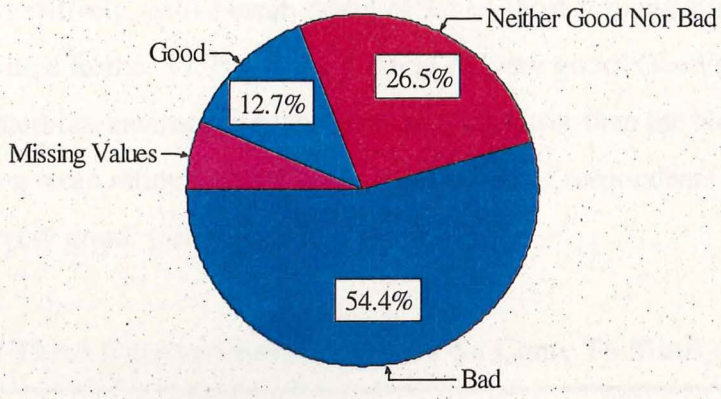


Figure 9: Perceived State of the World Environment

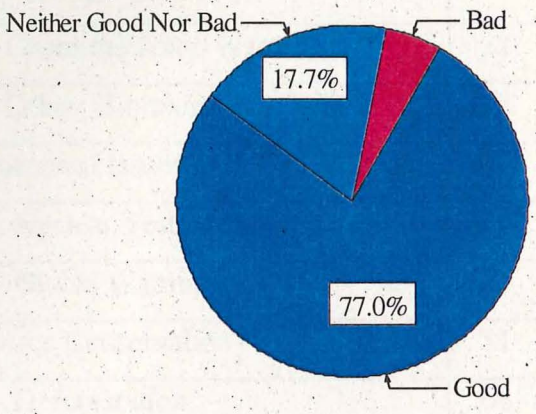


Figure 10: Perceived State of the New Zealand Environment

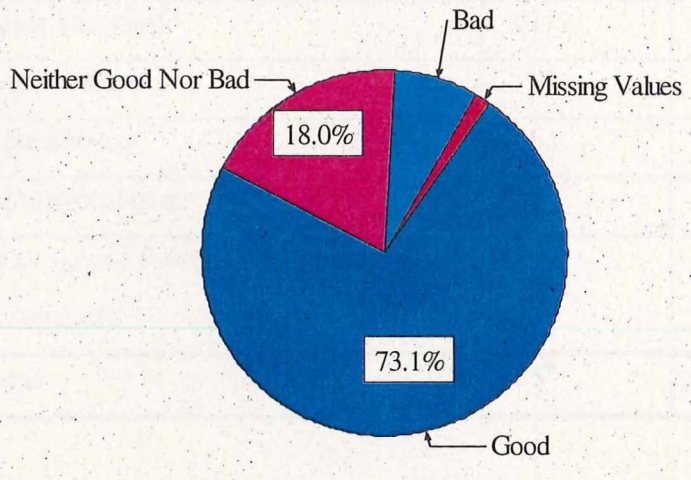


Figure 11: Perceived State of the Canterbury Environment

gave a 'very bad' rating (see Figure 9). The quality of the New Zealand environment was rated much more positively, with a mean rating of 2.11. Most respondents gave a rating of 'good', 59.4%, with a further 17.7% giving a rating of 'very good' (see Figure 10). The quality of the Canterbury environment was rated slightly lower than the New Zealand environment with a mean rating of 2.15. A total of 73.2% of respondents gave a rating of either 'good' or 'very good' (see Figure 11).

Table 2: First Three Environmental Problems To Come To Mind - Unprompted[7]

First Three Environmental Problems	Number of Responses	Valid Percentage
Pollution	100	13.0
- Water Pollution	71	9.2
- Air Pollution	68	8.9
- Chemical/Toxic Wastes	22	2.9
- Other: Biotoxins, Oil Spills	8	1.1
International Issues - Ozone Depletion	119	15.5
- Nuclear Testing/Waste	80	10.4
- Global Warming	21	2.7
Resource Conservation	31	4.0
- Deforestation	66	8.6
- Species Conservation	56	7.3
- Other: Mining, Non-Renewables	23	3.0
- Rainforests	19	2.5
Waste Disposal	61	8.0
Overdevelopment	8	1.0
Sustainability	6	0.8
Population Issues	5	0.7
Other - Acid Rain, Environmental Groups, etc.	4	0.5
Total	**765[8]**	**100.0**

[7] These items are ranked first according to the most frequently mentioned category, then by the most frequently mentioned item within each category.
[8] This total is lower than expected because not all respondents gave three responses as requested.

The response to Question 5, which asked the respondent to indicate their level of environmental concern on a five-point scale, showed a similar trend to that of Question 2. While 17% of respondents indicated they were 'very concerned' about environmental issues, the majority of respondents, 62.9%, considered they were only 'somewhat concerned'. The remaining 20.2% were undecided or unconcerned about environmental issues. The mean response of 2.09 reflects this moderate level of concern.

4.3 Descriptive Statistics: Section II

The statements that comprise each variable are described in the order in which they appear in the survey. Please note that, as described in Section 3.2, they can be framed positively or negatively, and therefore responses will differ according to the format of each individual statement. The mean responses referred to in the concluding paragraph of each subsection are based on a five-point response scale, where a response of 1 indicates strong support for environmental values, and a response of 5 indicates a lack of support.

4.3.1 Assumptions

As described in Section 3.1.2, this variable was derived from the Royal Commission on Social Policy's April Report (1988). It consisted of five statements, four of which were adapted from the report, and one of which was designed by the researcher. This variable was included to measure to what extent respondents believed people to be independent of the environment, especially with regard to their technological and scientific capabilities. To the extent that each of these statements is based on fact, these questions also measure the respondents' knowledge of the physical restraints placed on people by the natural environment.

In response to the first statement, 'The earth is finite', 69.4% of respondents agreed. However, a surprisingly large 14.8% were undecided, while 15.8% disagreed, indicating a high level of misunderstanding about the limitations of life on earth. The second statement, 'People are no longer dependent on the natural environment', drew a more informed response. Most respondents (83.5%) disagreed with this statement, while 11.5% were undecided and 5.1% agreed.

The third statement was: 'The natural environment does not impose limits on economic growth because resources are generally sufficient'. 66.2% of respondents disagreed, with a large proportion (19.3%) undecided, and 14.5% in agreement with the

statement. However the next statement, 'People can get along without natural resources', produced a more unequivocal response. The majority (93.9%) disagreed with this statement, with only 2.2% undecided and 4.0% in agreement.

The fifth and final statement, 'Science and technological break-throughs have abolished resource scarcity', produced a response similar to that for the second statement. Most respondents (82.4%) disagreed, while 10.3% were undecided and 7.3% expressed agreement.

It appears that most respondents understood the physical limitations of the earth and its resources, and our fundamental reliance on scarce natural resources. However, a small but persistent number of respondents deny or refuse to accept these basic facts. The mean response to the Assumptions variable was 2.03.

To assess the degree of knowledge for this variable, the percentage of Neither Agree Nor Disagree, Don't Know, and incorrect Agree/Disagree and Strongly Agree/ Strongly Disagree responses were added. The total responses indicating a lack of knowledge or misunderstanding ranged from a 49.9% for the first item, to 36.0% for the second statement, 30.0% for the third statement, and 23.7% for the fourth statement. The mean lack of knowledge or misunderstood response for this category was 34.9%.

4.3.2 Balance of Nature

This variable is designed to measure the extent to which respondents believe that the natural environment requires harmony and balance to survive. It is very similar to the Environmental Resilience variable eliminated following the pilot study, and consists of three statements derived from the New Environmental Paradigm model (Dunlap & Van Liere 1978).

The first statement was: 'The balance of the natural environment is very delicate and easily upset'. Most respondents (73.7%) agreed with this idea. However, a large group (17.7%) were undecided and 8.7% disagreed with this statement. The second statement, 'People must live in harmony with the natural environment in order to survive' produced a similar response, with 74.8% of respondents agreeing, 16.9% undecided, and 8.3% expressing disagreement with the statement.

The same was true of the third statement, 'When people interfere with the natural environment it often produces disastrous consequences'. Again, a high proportion of

respondents (22.8%) were undecided, while 69.4% agreed and 7.8% disagreed. It is important to note, however, that this statement was one of only three statements in the entire survey with respondents expressing moderate disagreement, but none expressing strong disagreement.

Most of the respondents agreed with the items included in this variable, and the mean response was 2.2 indicating moderate support for the ideas of people needing a harmonious and balanced relationship with nature.

4.3.3 Concern for Environmental Degradation

This variable consists of two statements adapted from published studies. As opposed to the Environmental Concern variable which measures concern generally, this variable measures concern specifically for damage done to the environment. The first statement was: 'Because of our polluting activities, we run a very serious risk of making the earth unsuitable for people to live in'. Despite the negative connotations for every respondent agreeing with this statement, 82.0% were in agreement. Of the remaining respondents, 11.8% were undecided, and 6.2% disagreed with this statement.

The second statement, 'Although polluted environments may look and/or smell bad, they are not usually harmful or dangerous to the natural environment', produced much stronger support. Half the respondents strongly disagreed with this statement, while a further 43.2% showed moderate disagreement. This gave a total of 93.9% of respondents disagreeing with this statement, while 3.9% were undecided and 2.1% disagreed.

The mean response to this variable was the strongest of all the variables at 1.7. Most respondents expressed strong or moderate support indicating a high awareness of environmental degradation and the role of people in contributing to it.

4.3.4 Economics

This variable consisted of three statements, adapted from published studies, which dealt with the conflict between economic growth and its resultant damage to the environment. This variable assumed that the respondent did not believe that economic growth and environmental protection and/or enhancement were compatible, and the comments of many respondents indicated that, in fact, many believed the two are largely incompatible.

The first statement was: 'The positive benefits of economic growth outweigh any adverse consequence on the natural environment'. While 73.9% disagreed with this statement, most expressed only moderate disagreement, and a further 19.6% were undecided. However, 6.5% of respondents agreed with the statement. The second statement was: 'Sometimes we have to put up with or accept a certain amount of pollution since the cost of cleaning it up or preventing it might cause a decline in economic growth'. This produced much less disagreement than the previous statement, with only 55.3% of respondents disagreeing. Again a large proportion of respondents (17.2%) were undecided, and 27.4% agreed with this statement.

The third statement, 'Protecting the natural environment should be given priority even at the risk of slowing down the growth of the economy' produced similar results. While 60.6% of respondents agreed with this statement, over a quarter (25.9%) were undecided, and 13.5% disagreed.

Respondents were moderately supportive of the environment with a mean response of 2.3. These items involved a trade-off between the environment and economic priorities, and the mean response indicates that although a majority of respondents support the environment over economic growth, many are not prepared to make that sacrifice.

4.3.5 Environmental Concern

As described under the 'Concern for Environmental Degradation' category, this variable measures environmental concern in general terms rather than specific aspects or foci for concern. This variable consists of two statements, one reflecting an awareness of environmental problems, and the other reflecting an understanding that the environment is not coping with the damage.

When disagreeing with the first statement, 'Environmental problems are not affecting my life', many respondents commented on winter air pollution in Christchurch and car exhaust emissions. The majority of respondents (72.9%) disagreed with this statement, while 15.9% expressed agreement and 11.2% were undecided.

The second statement was: 'Although there is continual contamination of lakes, streams, and air, the purifying processes of the natural environment soon return them to normal'. It is important to note that 10.6% of the total respondents chose the 'Don't Know' option indicating that these respondents may not have felt confident enough in their

knowledge of the environment to make a decision about whether they agreed or disagreed with the statement. However, of the valid responses, 80.0% disagreed with the statement, 13.2% were undecided, and 6.8% of respondents expressed agreement.

While most respondents were concerned about the environment, this concern was not strong with a mean response of 2.2. This is a slightly weaker response than that given for Question 5 (How concerned are you personally about environmental problems and issues?) in Section I of the questionnaire (see Section 4.2), where the mean response was 2.09. Both, however, indicate that while most respondents were concerned about the environment, that concern is moderate at best.

4.3.6 Environmental Powerlessness

This category was included to give an indication of whether or not respondents felt that environmental problems, specifically pollution, could be affected by their actions. The statement, adapted from published studies, was: 'There really is no point in getting upset over pollution as there is little we can do to stop it'. This produced the most positive response of any category, with almost half the respondents (47.1%) expressing strong disagreement with this statement. This produced a total of 92.9% of respondents expressing disagreement, while only 4.3% of respondents were undecided, and 2.9% expressing agreement. To the extent that this item measures locus of control, this sample can be said to have a highly internalised locus of control.

As with the third 'Balance of Nature' statement, this statement produced no respondents expressing a strong lack of support. As a result, the mean response to this category of 1.63 was the most positive of any category.

4.3.7 Gender Perception

As described in Section 3.1.2, the statements in this category were designed by the researcher, and included to give an indication of whether the sample population felt there was a difference between the sexes in terms of environmental concern. The first statement, 'Men tend to be more interested than women in manipulating the natural environment and using its resources' produced the least negative response for this category. Most respondents (28.6%), however, were undecided about this statement, with a further 11.3%

choosing the 'Don't Know' option. Of the valid respondents[9], most (38.2%) expressed disagreement with this statement, while 29.3% of respondents expressed agreement.

The second statement, 'Women are more concerned about environmental problems and issues than men', produced much the same response as the first statement with a large proportion of respondents (31.1%) undecided and 12.7% choosing the 'Don't Know' option. However, 42.8% of the valid responses expressed disagreement with the statement, while 21.0% expressed agreement. The third statement was: 'Women are more concerned about degradation of the environment than men', and produced the most negative response of the three statements. Again, large numbers of respondents were undecided or chose the 'Don't Know' option (29.3% and 13.8% respectively). Of the valid responses, 19.6% agreed with this statement, while 45.9% expressed disagreement.

Most people disagreed with the statements in this category, producing a mean response of 3.33, which was the most negative response of any category. Few respondents expressed strong support for these items, while the majority expressed moderate or strong disagreement. A large proportion chose to express no opinion or selected the 'Don't Know' option. These items generated the most unsolicited comments, most of which indicated the respondents refusal to attribute either gender with more environmental concern, or expressing concern that the items were sexist.

4.3.8 Humans Over Nature

This category consisted of three statements derived from the New Environmental Paradigm model (Dunlap & Van Liere 1978), and was included to measure the extent to which respondents believe people are superior to, and should therefore exploit, the natural environment. The first statement was: 'People need not adapt to the natural environment because they can remake it to suit their needs'. Most respondents (74.7%) disagreed with this statement, while a further 14.5% were undecided. Only 10.8% of respondents expressed disagreement.

The second statement, 'The natural environment is valuable in itself, and not simply as a source of resources', produced a more positive response. The majority of respondents (93.5%) expressed agreement with this statement, while only 2.1% disagreed. A further 4.3% of respondents were undecided. The third statement was: 'The natural environment is

[9] 'Don't Know' responses were recoded as missing, and hence not part of the valid response percentage.

a system of resources which people should control, transform, and organise to suit their own needs'. This statement produced a similar response to that for the first statement of this category. While most respondents (68.7%) expressed agreement, 18.5% of respondents were undecided about this statement, and 12.7% disagreed.

The response to this category was very positive, with a mean response of 2.02. Few respondents expressed disagreement with the statements in this category, with most choosing to support the idea of the natural environment as more than simply resources for human use.

4.3.9 Legalism

This category, which consists of one statement derived from published studies, was included to measure the extent to which respondents believe stronger laws are required to solve pollution problems. The statement was: 'What is needed are stronger laws to force industries, Government, and individuals to decrease or eliminate pollution'. This produced the third most positive response of any category with a mean response of 1.98. Almost two-thirds of respondents (60.6%) expressed moderate agreement, with a further 23.5% indicating strong agreement with this statement. Only 5.4% of respondents disagreed, and 10.5% were undecided.

4.3.10 Limits To Growth

This category is the third of the New Environmental Paradigm model categories (Dunlap & Van Liere 1978), and consists of two statements. They were included to measure the extent to which respondents believe that the natural environment places limits on expansion. The first statement, 'There are limits to growth beyond which our industrialised society cannot expand', produced only a moderately positive response. Only 6.3% of respondents expressed strong agreement with this statement, although 54.6% expressed moderate agreement. While 19.6% of respondents disagreed with this statement, 25.8% were undecided, and 13.8% of the total respondents chose the 'Don't Know' option.

The second statement, 'The earth is vast with almost unlimited natural resources', produced a much more positive response. 91.7% of respondents disagreed with this statement, and the responses were evenly spread between moderate and strong disagreement. A further 3.6% of respondents expressed agreement with this statement, while 4.7% were undecided. Like the 'Humans Over Nature' category, this category

produced a very positive response with a mean of 2.05. Most respondents expressed support for the statements in this category, with many of those expressing strong support.

4.3.11 Scarcity Awareness

This category, consisting of one statement adapted from published studies, was included to measure the extent to which respondents believed that resources are scarce and could be depleted by consumption. The statement, 'If our rate of consumption keeps growing, we will soon exhaust the earth's natural resources', produced a number of comments about the meaning of the word 'soon'. Some respondents indicating they would agree with the statement if 'soon' meant the next, say, one hundred years, but would disagree if 'soon' meant the next, say, twenty years.

Despite this, however, 79.4% of respondents expressed agreement with this statement, with 11.1% undecided. Only 9.5% of respondents disagreed with this statement, producing a positive mean response of 2.16.

4.3.12 Technocentrism

This category consisted of two statements, derived from published studies, included to measure the extent to which respondents question the benefits of science and technology. The first statement, 'Science and technology often do as much harm as good', produced only a moderately positive response. While 51.5% of respondents expressed agreement with this statement, only 9.9% of that total expressed strong agreement. A large proportion of respondents (28.5%) were undecided about this issue, while 20.0% disagreed with the statement.

The second statement was: 'Most environmental problems can be solved by applying more and better technology'. Again a large proportion of respondents (32.6%) were undecided about this statement. However, 46.2% expressed disagreement, while 21.3% agreed with the statement. Most respondents expressed moderate support for the statements in this category giving a mean response of 2.67. This result was due in part to the large proportion of respondents who were undecided, and small numbers expressing strong support.

4.3.13 Ecological Concepts

This category was included to give an indication of the extent to which the respondents believe they are subject to, and understand, the physical laws of the earth. As

discussed in Section 3.1.2, the statements in this category were derived from the Royal Commission on Social Policy's April Report (1988), and were adapted for use in this survey. As is the case for the items of the Assumption variable, to the extent that each of these items is based on fact, these questions also measure the respondents' knowledge of the concepts that are the basis of understanding ecological processes.

The first statement, 'Nature knows best', produced a response notable more for its lack of response. Almost one third of respondents (32.8%) were undecided about this statement, while 6.7% of the total respondents chose the 'Don't Know' option. However, only 13.7% of respondents expressed disagreement, with the majority (53.4%) expressing agreement with the statement. The second statement, 'Every action and event has an effect on and consequence in the natural environment', produced a similar response. While 21.5% of respondents were undecided, 65.0% agreed with the statement, and 13.5% expressed disagreement.

The third statement, 'Directly or indirectly, everything is connected to everything', produced a somewhat more positive response. 75.9% of respondents agreed with this statement, while only 3.9% expressed disagreement. However, again indecision was high (20.2%), with 8.1% of the total respondents choosing the 'Don't Know' option. The fourth statement was: 'Everything must go somewhere', and produced a similar response to the third statement. Most respondents (81.2%) agreed with this statement, with only 3.1% expressing disagreement. This was the third statement of three in this survey to produce no respondents indicating a strong lack of support, that is, strongly disagreeing with the statement. 15.7% of respondents were undecided, and 6.4% of the total respondents chose the 'Don't Know' option.

The response to this category was moderately positive, with a mean response of 2.26. Most respondents expressed agreement with the statements in this category, with only a few indicating moderate disagreement with this group of statements.

As an assessment of the degree of knowledge for this variable the percentage of Neither Agree Nor Disagree, Don't Know, and the incorrect Agree/Disagree and Strongly Agree/Strongly Disagree responses were added. The total responses indicating a lack of knowledge or misunderstanding ranged from 36.8% for the third statement, and 32.8% for the first statement, to 23.0% for the fifth statement, 17.7% for the second statement, and

7.1% for the fourth statement. For the category as a whole, the mean response for lack of knowledge or misunderstanding was 23.5%.

4.3.14 Time Orientation

This category consisted of two statements, one derived from published studies and one created by the researcher. 'Time Orientation' was included to measure the obligation respondents felt for future generations. The first statement, 'Natural resources should be used primarily for the benefit of the present generation', met with a strong response, with 83.0% of respondents expressing disagreement. Only 6.4% of respondents agreed with this statement, while 10.6% were undecided. The second statement was: 'Whether or not future generations can solve environmental problems, we should not put them in the position of having to do so'. This produced an identical response to that for the first statement, with 83.0% of respondents expressing agreement. 8.5% of respondents disagreed with this statement, and 8.5% were undecided.

This category produced the second most positive response of any category with a mean response of 1.95. While most respondents expressed moderate support for this category, almost as many expressed strong support. Few respondents expressed a lack of support or were undecided.

4.3.15 Urbanism

This category was included to measure the extent to which these respondents value urban life over the qualities of the natural environment. It consisted of three statements derived from published studies, the first being 'The life of the big city is far more interesting than the natural environment could ever be'. This produced a strongly positive response, with 75.2% of respondents expressing disagreement, and these responses were spread evenly between moderate and strong disagreement. Only 5.3% of respondents agreed with this statement, and 19.5% were undecided.

The second statement, 'Our cities have become too big' caused a little confusion for those with experience of large cities outside New Zealand, as described in Section 4.3.1. Of the small number who commented, most indicated that if the statement referred to New Zealand cities they would disagree. However, if the statement referred to cities outside New Zealand, these respondents indicated that they would agree strongly.

Despite the response to the second statement, the mean response to this category was 2.17. Few respondents showed a lack of support for this category, while the majority showed moderate or strong support.

4.3.16 New Environmental Paradigm and Overall Environmental Concern

When the results for the three New Environmental Paradigm (NEP) variables (Balance of Nature, Humans over Nature, and Limits to Growth) were combined, the resultant histogram illustrated the strongly skewed response distribution (see Figure 12). Figure 12 shows the percentage of responses given in the five-point response scale for the three NEP variables. The majority of respondents agreed with these items, suggesting support for NEP beliefs and attitudes generally.

Figure 12: New Environmental Paradigm Response Distribution

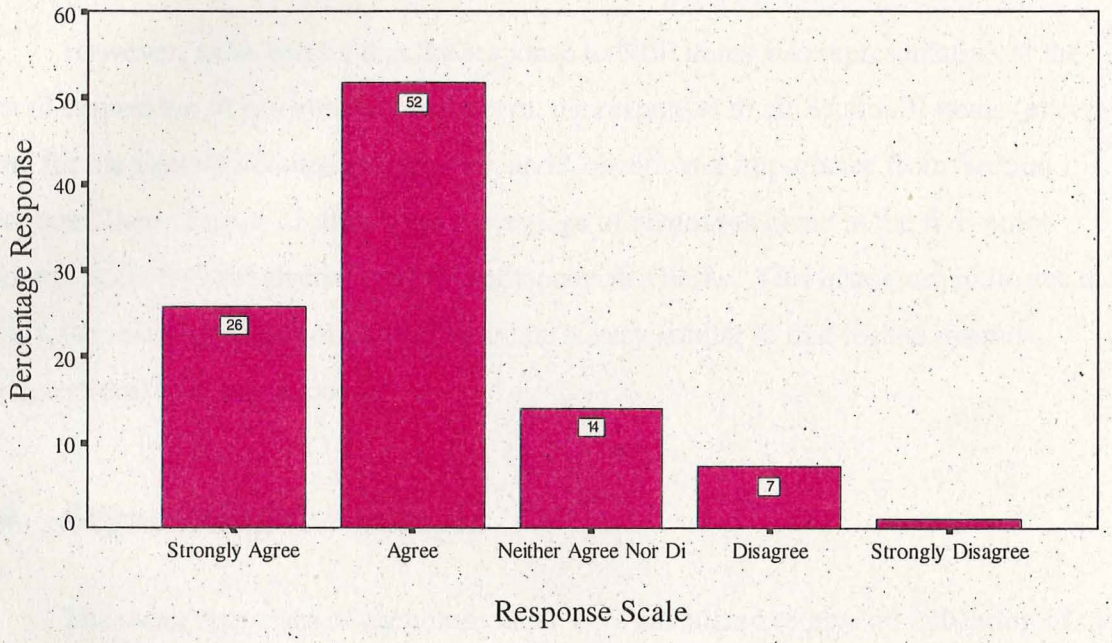
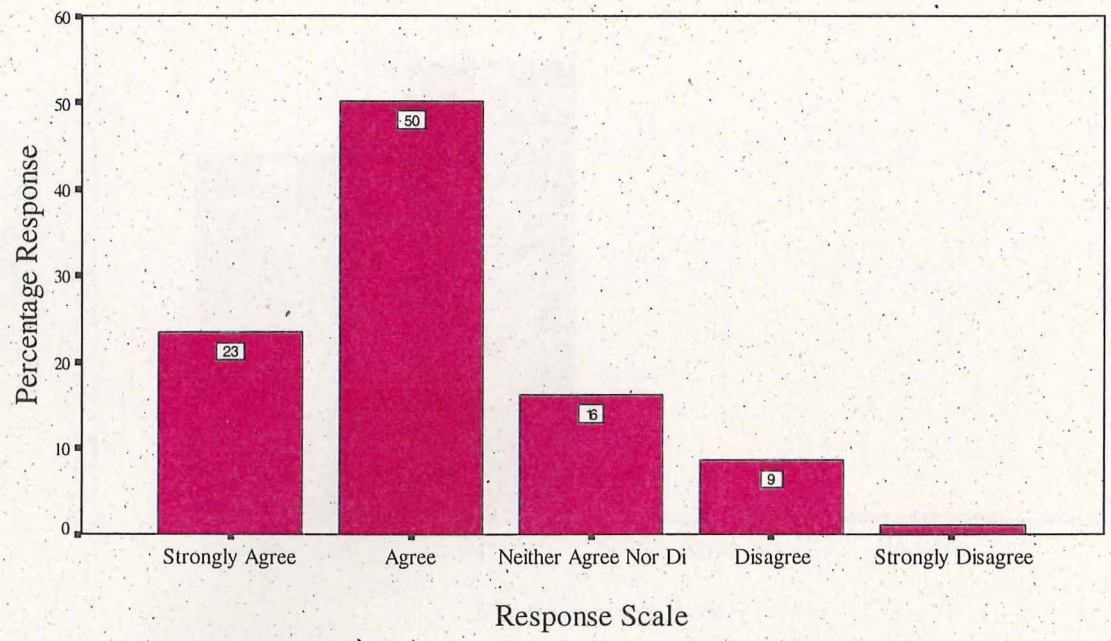


Figure 13: Overall Environmental Concern Response Distribution



However, to be certain that the response to NEP items was representative of the overall expression of environmental concern, the responses to all Section II items (except those for the Gender Perception variable), and Concern and Importance from Section I were combined. Figure 13 shows the percentage of responses given in the five-point response scale for the selected environmental concern items. This histogram indicates that, in fact, the response distribution to NEP items is very similar to that for the overall environmental concern response.

4.4 Segmenting the Sample

The mean responses of each individual were calculated to give an indication of the mean response distribution of the population (see Figure 14 & 15). This provided the opportunity to segment the sample population according to their pattern of mean responding much as Heylen Research (1992) have done (see Section 2.1.3).

Figure 14: Mean Environmental Concern Over All Cases

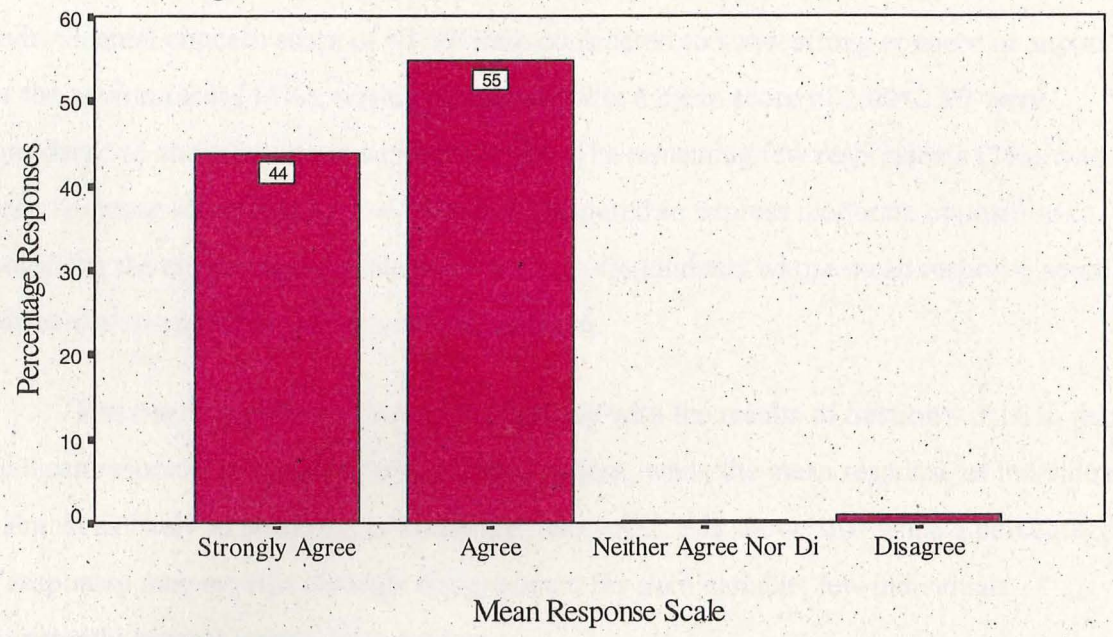


Figure 15: Mean Response Distribution Over All Cases

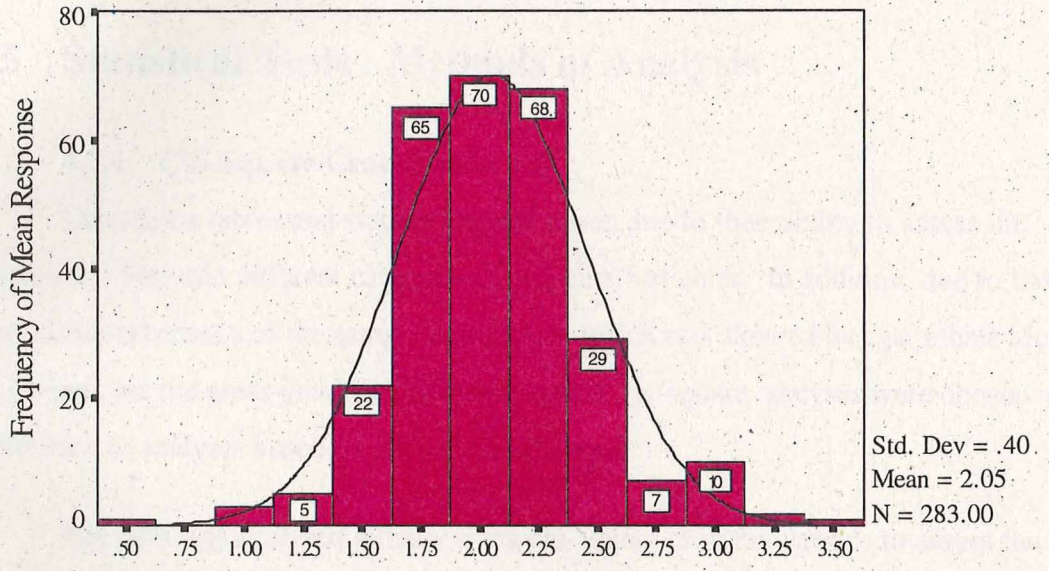


Figure 14 shows the percentage of mean responses of individuals over the five-point response scale from Strongly Agree to Strongly Disagree. To achieve this, the mean responses of each individual were recoded from the mean response into the five-point scale. The mean response of the vast majority of respondents is an expression of environmental concern, and few fail to consistently express an opinion or a lack of concern. Almost as many respondents express a mean response of strong agreement as do those with a mean response of agreement. The Figure 15 shows this response scale as the percentage of individuals expressing similar mean responses. This shows that the mean responses of these respondents forms a normal distribution.

For the purposes of segmenting the sample, respondents expressing a mean environmental concern score of <1.99 were considered to show strong concern or support for the environment (44%), while respondents with a mean score of 2.00<2.99 were considered to show moderate support (55%). The remaining few respondents (1%) whose mean response score was 3.01<4.00 were considered to express moderate opposition to protecting the environment, while there were no respondents whose mean response score indicated a strong lack of environmental concern.

This result appears to show a discrepancy with the results of Section 4.3.16 in that the mean response to variables is moderate concern, while the mean response of individuals is almost as likely to be strong as moderate. However, this shows that while a percentage of responses may express strongly disagreement for each variable, few individuals consistently express strong disagreement.

4.5 Statistical Tests - Methods of Analysis

4.5.1 Chi-Square Crosstabulations

Chi-square tables and statistics were chosen due to their ability to assess the relationship between different categories of nominal variables. In addition, due to the non-normal characteristics of the sample population, which was skewed by age, ethnic identity, education, and the areas in which they were raised, chi-square analyses were chosen in preference to analyses based on normal distributions.

The data was analysed initially using chi-square crosstabulations to assess the relationship between demographic variables and the types of responses given to individual items. However, it was realised that when using a five-point response scale, many of the crosstabulations had cells with counts of 5 or less, a number below which the chi-square statistic is less effective. To ameliorate this problem, the responses were recoded so that 'Strongly Agree' and 'Agree' became a single response of 'Agree', and 'Strongly Disagree' and 'Disagree' became a single response of 'Disagree', resulting in a three-point response scale. Although this was effective for the first series of crosstabulations, when a third controlling variable was introduced, cell counts were reduced. For this reason, all results where a third variable has been controlled for should be interpreted with caution.

In the sections that follow, the results of chi-square crosstabulations between two variables, one demographic and one response variable, are reported. Each demographic

variable was initially crosstabulated with all response variables to produce what will be termed an initial relationship. All the crosstabulations were then recalculated controlling for a third variable regardless of whether or not a significant initial relationship had been evident. This was done to uncover the relationships that were masked by the averaging process of looking at the marginal distribution of only two variables.

All crosstabulations mentioned are for results with significance levels of $p<0.09$. This level was chosen to observe any trends which the more restrictive significance level of $p<0.05$ may have obscured.

4.5.2 Internal Reliability

Tests for reliability measure the differences in responses to the same question (de Vaus 1985). Since a second survey of the same respondents was not possible, reliability was measured within each variable since it was assumed that the items within each variable measured similar aspects of environmental concern. Internal reliability was tested for each variable by crosstabulating each item in a variable with each of the other items in the variable. Most of the crosstabulations resulted in a p of between 0.00 and 0.05, indicating a high level of internal reliability. However the following pair of crosstabulations produced p values indicating that the reliability between these particular items is low.

ASSUM 1 x ASSUM 3 $p = 0.09650$

URBAN 2 x URBAN 3 $p = 0.13822$

This result may be understandable for the Assumption items which were not tested prior to their use to ensure that they measured the same aspects of environmental attitudes. However, the Urbanism items have been used frequently in the literature, and it seemed unusual that the type of responses obtained for each should be sufficiently different to produce such a result. When the content of each item is scrutinised, however, it appears that the high p value may result mainly from the confusion caused by URBAN 2 ('Our cities have become too big') as described in Section 4.3.16 of this Chapter.

4.5.3 The Controlling Variables

Each chi-square crosstabulation was recalculated with a third controlling variable. The variables controlled for were age and gender. They were used to assess whether or not the relationship indicated in the original crosstabulation would hold, or whether the differences could be due to the characteristics of the respondents. Both controlling variables were used despite the limitations of each as described below.

Many published studies categorise the youngest age group as under 25 years and, therefore, most of this sample population would be considered young. Although many studies (ANOP Research 1991, Arcury 1990, Caro & Ewert 1995, Dunlap & Van Liere 1978, Heylen Research 1992, Keys Young 1994, Tognacci *et al.* 1972, Tucker 1978, Van Liere & Dunlap 1981) indicate that youth was positively associated with environmental concern, recent studies (Castles 1992, Gooch 1995, Wall 1995) have shown that the effect of age may have been attenuated. Although gender was not skewed in this sample, published studies have not established a clear relationship between gender and environmental concern.

Age and gender were selected as controlling variables despite these limitations because, the differences in responses between categories of the remaining demographic variables could be a result of the differences in the age or gender make-up, rather than some inherent difference between the categories.

4.6 Statistical Tests: Section I

4.6.1 Most Important Problem

In this section, the difference in the response of subgroups of the population is described. Chi-square values are not reported. There were differences in the issues that particular groups of respondents chose as the most important issue facing New Zealand today (see Section 4.2).

Racial tension was more likely to be chosen by those raised in urban areas, those respondents who were married or living with a partner, and those in their first or fourth-or-more year of study. Treaty of Waitangi issues were more likely to be chosen as the most important issue by those raised in large urban areas, those with a foreign ethnic identity, and male respondents.

The environment was more likely to be chosen by those raised in large urban areas, and single respondents. Females were only slightly more likely than males to choose the environment over other issues as the most important issue facing New Zealand. Nuclear testing was more likely to be chosen by the 19-20 year age group, and, correspondingly, those in their second year of enrolment. Single respondents and those engaged in full-time study were also more likely to choose this issue as most important.

Violence/crime was chosen more often as the most important issue in New Zealand by respondents with a foreign ethnic identity, and those in their first year of enrolment, while moral/ethical issues were chosen more often by those raised in the South Island, and those in their second year of enrolment.

The issues of economic instability and unemployment were more likely to be chosen as most important by those in the 17-18 year age group, while unemployment was also a high priority for those raised in small urban areas. Education/health/welfare issues were chosen more often by those in older age groups (23-29 years and 30+ years), those in their third or fourth-or-more year of study, respondents engaged in part-time study, and those with qualifications. These issues were also chosen more often as most important by respondents who were married or living with a partner, those raised in rural areas, and female respondents.

The rich/poor division was the most important issue to respondents who were married or living with a partner, while political instability/MMP was of most concern to those raised in New Zealand, especially those raised in the South Island.

4.6.2 Concern

Initially some exploratory crosstabulations were undertaken in order to assess some of the factors other than demographic variables which influenced the responses. When Concern (the item which asked respondents to rate their level of concern for environmental issues) was crosstabulated with all other variables, except demographic and 'perceived quality of the environment' variables, 16 of the 38 achieved p values of 0.001 or less. A further 9 variables achieved p values of 0.05 or less, and one of 0.09 or less. Only 11 variables (28.9%) did not achieve p values of <0.09 in this crosstabulation. This indicates that a respondent indicating they have a high level of concern for environmental issues when asked directly, will also respond positively to most statements measuring other aspects of environmental concern.

4.6.3 Importance

When Importance (the item asking how important the respondent thought environmental issues were) was crosstabulated in the same way with all non-demographic variables, a similar result was achieved. Over a third of the p values were 0.001 or less, while a further 26% achieved a p value of 0.05 or less. Most of the same variables that did not achieve p values of <0.09 in the previous crosstabulation, also failed to in this

crosstabulation. However slightly more variables (36%) were not significant when combined with Importance, than were not significant when combined with Concern (see Section 4.6.2). This indicates that Importance is slightly less indicative of the responses of the sample population to items measuring other aspects of environmental concern than is Concern.

4.6.4 Perceived Quality of the Environment

Responses to the questions about the perceived quality of the environment of New Zealand or Canterbury had almost no relationship with the responses to other items. However, the responses to the question about the perceived quality of the world environment were related to responses to other items in Section II of the questionnaire. In general, respondents who perceived the quality of the world environment to be 'bad' or very bad' were more likely to be concerned for environmental degradation, reject economic growth in favour of environmental protection, and believe that people should live in harmony with the environment. They were also more likely to believe that the environment exists for reasons other than to provide people with resources, and that the present generation should protect the environment to provide for future generations. In addition, they were less likely to hold incorrect assumptions about limits that the environment imposes on growth, and the dependence of people on natural resources, and were more likely to believe that 'nature knows best', and that everything we do has an effect on the environment.

To view these results from the opposite perspective, it appears that respondents with higher levels of environmental concern are more likely to perceive the state of the world environment negatively.

4.7 Statistical Tests: Section II

Each demographic variable was crosstabulated with the 37 items from Section II of the questionnaire, as well as the three 'perceived quality of the environment' items, Concern, and Importance from Section I of the questionnaire. Please note that, as previously discussed, all crosstabulations mentioned are for results with significance levels $p<0.09$.

4.7.1 Age

When respondents were divided by age, the relationships produced were mixed. The relationship with the QUAL item indicated that the 21-22 and 30+ age groups were more likely to perceive the New Zealand environment positively. When gender was controlled for, another QUAL item showed a similar relationship with age such that the 30+ age group was more likely to perceive the Canterbury environment positively.

Of the other five initial crosstabulations, four indicated that the 19-20 age group was least likely to express support or concern for the environment. Three of these items indicated that the 30+ age group were more likely to express support or concern for the environment. The 21-22 and 23-29 age groups were more likely to express support or concern in two of these relationships. Most of these relationships held when gender was controlled for. In addition, five further items which did not originally indicate a relationship, confirmed this result. Overall, the 19-20 age group consistently expressed lower levels of concern or support for the environment, while the 21-22 and 23-29 age groups were more likely to express support or concern. The 30+ age group had a mixed relationship with these items, rather than the consistently lower expression of support for the environment that was expected from the literature findings (see Section 2.4.1). In fact, this group was slightly more likely than not to express concern for the environment.

4.7.2 Country of Childhood

As the number of foreign-raised respondents was small (n = 39), they were combined into a single group, and these results should therefore be interpreted with caution. When respondents were divided by country of childhood, relationships with eight items were observed. Except for the Gender Perception and Ecological Concept items, which foreign-raised respondents were more likely to support, New Zealand-raised respondents were more likely to express support or concern for the environment. These results were confirmed when age and gender were controlled for, and the result held for the fifteen additional items which had appeared when the controlling variables were applied. Of these, two additional Ecological Concept items indicated that New Zealand-raised respondents were more likely to agree, contrary to the result for the original Ecological Concept item. However two additional Gender Perception items confirmed the result for the original Gender Perception item, which New Zealand-raised respondents were less likely to support. For the remaining eleven items, New Zealand-raised respondents were more likely than their

foreign-raised counterparts to express support or concern for the environment. They were also more likely to perceive the New Zealand environment positively.

4.7.3 Region of Childhood

These crosstabulations showed the difference in patterns of responding between respondents raised in the North Island and South Island, while the foreign-raised respondents were combined into one group as they were earlier. Hence the same caution is required in interpreting these results as was noted for the previous section. As was the case for the previous section, foreign-raised respondents were more likely to agree with the Ecological Concept item, and this relationship held for both this item and an additional Ecological Concept item when age and gender were controlled for. In addition, when the controlling variables were applied, the relationship between foreign-raised respondents and all three Gender Perception items held, with foreign-raised respondents more likely to support these items.

For four of the six remaining items, North Island-raised respondents were more likely than South Island-raised respondents to express support or concern for the environment. This result seemed unusual in that most (51%) of the North Island-raised respondents were raised in small-urban areas. The respondents raised in these areas tend to be more moderate in their support of the environment (see Section 4.7.4). When age and gender were controlled for, most of the original relationships held. However, the relationships that appeared for an additional twelve items indicated that, in fact, South Island-raised respondents were more likely to express support for the environment. Most (68%) of the South Island-raised respondents were raised in large-urban areas, and this result is discussed further in Section 4.7.4.

4.7.4 Type of Area of Childhood

When respondents were divided by the type of area of childhood (i.e. large-urban, small-urban, or rural), three items showed a relationship. Of these, the Concern item indicated that rural-raised respondents were most likely, and large-urban-raised respondents least likely, to express personal concern for the environment. This relationship held when age and gender were controlled for. The remaining two items indicated that large-urban-raised respondents were most likely, and rural-raised respondents least likely, to perceive the New Zealand and Canterbury environments positively. When gender and age were controlled for, the response for rural-raised respondents with respect to these items was confirmed, while the response for large-urban raised respondents was not.

When the controlling variables were applied, fifteen additional items were significant. For fourteen of these, large-urban-raised respondents were most likely, and rural-raised respondents least likely, to express concern or support for the environment. The last item, Importance, indicated that, similar to the result for the Concern item, rural-raised respondents were most likely to view the environment as the 'most important issue'. Large-urban-raised respondents were most likely to view the environment as a 'quite important' or 'less important' issue. Hence rural-raised respondents are more likely to respond positively to direct questions about the importance of, or their personal concern for the environment, and they are more likely to perceive the New Zealand and Canterbury environments negatively. However, this is not supported when aspects of their environmental attitudes and beliefs are measured.

4.7.5 Enrolment Status

When respondents were divided by enrolment status (i.e. full-time or part-time students), relationships with six items were observed. Of these, five indicated that part-time respondents were more concerned for the environment, while the sixth indicated that part-time respondents are more likely to view the Canterbury environment negatively. This latter relationship held when gender and age were controlled for, with part-time respondents also more likely to perceive the quality of the New Zealand environment negatively. When the controlling variables were applied, four of the remaining five items confirmed that part-time respondents were more likely to express support or concern for the environment. However, the fourteen additional items that were significant when these variables were controlled for indicated that, in fact, part-time respondents are somewhat less likely than full-time respondents to express support for the environment. Part-time respondents are ambivalent with regard to the Gender Perception variable, showing support for half the items.

4.7.6 Ethnic Identity

Ethnic identity (New Zealand-ethnic or foreign-ethnic) showed relationships with eleven items. As with the results for country of childhood, except for the Gender Perception item, New Zealand-ethnic respondents were more likely to express concern or support for the environment. Those with a New Zealand ethnic identity were also more likely to view the New Zealand environment positively. This relationship held when the controlling variables were applied. In addition, when age and gender were controlled for,

thirteen further items showed that New Zealand-ethnic respondents were more likely to express concern or support for the environment.

4.7.7 Marital Status

The results for marital status were mixed. For three of the four relationships, respondents who were married or living with their partner were more likely to express support or concern for the environment. When gender and age were controlled for, slightly more than half the relationships (including those which did not appear in the initial crosstabulation) indicated that single respondents were more likely to express concern, while slightly less than half of the relationships indicated that this was the case for respondents who were married or living with their partner. In addition, single respondents were less likely to perceive the Canterbury environment positively.

4.7.8 Qualifications

When the sample was divided by qualifications held (i.e. undergraduates, postgraduates, and other qualifications), the result was mixed. Initially only four items showed a relationship with qualifications, and of these, two indicated that 'Other' respondents were most likely to express concern for the environment, while two indicated that 'Other' respondents were most pessimistic about the New Zealand and Canterbury environments. However, when age and gender were controlled for, a different picture emerged, with fourteen additional items showing relationships. For the 'perceived quality of the environment' items, 'Other' respondents remained most likely to view the New Zealand and Canterbury environments, as well as the world environment, negatively. Undergraduate respondents were most likely to view these environments positively.

The initial relationships, showing 'Other' respondents as more likely to express support for the environment, were not confirmed. In fact, postgraduate respondents were most likely to express support or concern for the environment, though only slightly more than undergraduates. 'Other' respondents were least likely to be concerned about the environment for these items.

4.7.9 Gender

The gender of respondents showed an initial relationship with sixteen items. Women were much more likely to agree with Gender Perception items than men, and this was confirmed when age was controlled for. Except for an Assumption item, for which men were more likely to agree, all other measures of environmental concern indicated that

women were more likely to express concern for the environment. This included three of the four Ecological Concept items which were described in Section 4.3.13 as, to some extent, a measure of environmental knowledge. Also included in this set of crosstabulations was the Importance item which, due to its response scale, remained in a five-point response format. Although men were more likely to view the environment as the 'most important issue', they were also more likely to view it as a 'quite important', 'less important', and 'not at all important issue'. Women were much more likely to view the environment as a 'very important issue'.

When age was controlled for, these original relationships held, and nine additional relationships were observed. Of these, women were more likely to perceive the world environment negatively, and the Canterbury environment positively. While women were less likely to agree with Assumption items, they were more likely to express support or concern in response to all other items. These included, among others, Concern, both Environmental Concern items, the Scarcity Awareness item, and Technocentrism items. However, men did not express higher levels of internal locus of control in response to the Environmental Powerlessness item as expected from the literature findings (see Section 2.3.8).

4.7.10 Years of Enrolment

When respondents were divided by years of enrolment at university, only three items showed a relationship. Of these, two indicated that respondents in their second year of enrolment were more likely to express concern or support for the environment, and these results were confirmed when age and gender were controlled for. As this group corresponds approximately with the 19-20 age group which was consistently less likely to express concern (see Section 4.7.1), this result seemed contradictory. However, when the controlling variables were applied, twenty-two additional items indicated a relationship with years of enrolment. Of these, two Gender Perception items showed no consistent relationship, while the third indicated that those in their second year were more likely to perceive the New Zealand environment positively. This result was contrary to the relationship between age and this item (see Section 4.7.1). However, the remaining items, taken together, suggest that respondents in their third year of enrolment were slightly more likely to express support or concern for the environment, while those in their first year were least likely.

CHAPTER 5

Discussion

The purpose of this study was to identify the characteristics of environmentally concerned individuals, and describe the features of the environmental attitudes measured. The recent international survey conducted by Dunlap, Gallup, & Gallup (1993) demonstrated widespread public concern for environmental issues in many nations. The results of the present study have shown that this sample was similarly concerned, and these respondents are concerned about similar specific environmental issues. However, as others (Dunlap 1992, Dunlap & Scarce 1991, Erskine 1972, Gooch 1995, Keys Young 1992, Vining & Ebreo 1990, Waghorne 1977) have found, although it is rated as important, and respondents will generally express high levels of concern, the environment is still not the most salient issue.

The question posed as a guide to this research (see Section 1.2) was: "Have we, as New Zealanders, joined this massive uprising of concern for the environment, or are our public displays of outrage simply a localised response to a currently topical issue?" The answer to both parts of this question appears to be 'Yes'. As expected, the majority of this sample expressed personal concern for the environment, including NEP items, and the mean level of concern for individual respondents was almost evenly divided between moderate and strong concern. The anomalous result apparently caused by the nuclear issue suggests that localised responses to issues brought to public attention by environmental groups and the media do not necessarily indicate heightened salience of environmental issues in general. In fact, the salience of environmental issues in this sample rates as among the lowest when compared to other nations (Dunlap, Gallup, & Gallup 1993). In general, this sample responded as expected with regard to salient issues. Social unrest, as characterised by racial tension, Treaty of Waitangi/Maori sovereignty/land claims, and violence/crime issues, comprised the majority of the top five issues.

The discrepancy surrounding responses to the nuclear issue may be explained by two factors. As previously mentioned (see Section 1.1.3), when polled in 1989 over 80% of New Zealanders supported the nuclear-free policy. It may be that the nuclear-free policy is now viewed, as Lange (1990) suggests, as part of New Zealand culture and psyche to which we respond strongly when it is threatened. Alternatively, it may be that nuclear issues are

associated more closely with peace movement issues, and issues of health and safety (that is, self preservation), than with environmental issues. So, while attracting widespread support, the nuclear issue is not necessarily associated with environmental concerns.

This sample responded as expected with regard to proximity. They rated the world environment negatively, and the Canterbury and New Zealand environments positively. The lack of a pronounced difference between the perception of local and national environmental quality, however, could indicate some size effect. New Zealand is a small country compared to the nations of Europe, the Americas, and Australia. The lack of difference in the perception of local and national environmental quality in this sample suggests that a national focus on environmental quality conveys more distance and less familiarity to the individual in larger nations than it does to the New Zealand resident.

The next question posed as a research guide was: "How strongly do we hold our beliefs about the rights of the environment?" Although the mean responses to individual and combined variables indicated moderate environmental concern, the mean responses of respondents in this sample show almost even division between moderate and strong support for the environment. However, given that the environment is not the most salient of issues for these respondents, these findings tend to support the contention that protecting the environment is viewed by many as a luxury rather than a necessity.

Although most respondents are concerned about the environment, other issues receive more attention. The moderate support for choosing the environment over economic growth could be perceived as indicative of this. However, the response to this variable may be due to the belief of respondents that both environmental protection *and* economic growth are possible.

When compared to the population segments found by Colmar Brunton (1993), Heylen Research (1992), and O'Riordan (1989), the mean responses of individuals show extraordinarily strong support for the environment. One reason for the difference may be that the Colmar Brunton and O'Riordan segments were made on the basis of behaviour or assumed behaviour patterns, as well as attitudes and beliefs. In addition, it may be that the mean responses to questions were used to segment the sample, rather than the mean responses of individuals used in this study. The segments indicated by this sample suggest that the swing towards the ecocentric end of the continuum is gathering momentum, for

attitudes and beliefs at least. That this sample is strongly skewed toward pro-environmental attitudes, however, gives no indication of the level of pro-environmental behaviours.

If the contention of Ramsey & Rickson (1976), that individuals with a 'passionate interest' in environmental problems are most likely to engage in environmentally responsible behaviours, is correct, one could expect that the percentage of individuals performing such behaviours in this sample would be slightly less than half. However, given that the salience of environmental issues and problems for this sample is low, this could be a vast overestimation.

The third question posed in Section 1.2 was: "Are there differences in the attitudes held by different segments of our society?" Although this sample cannot be considered to be representative of New Zealand society, some comments can be made about whether the differences in responding between particular subgroups corresponds to what was expected from an examination of the literature.

Not only did age show no consistent affect on responding, the predicted decrease in support for the environment with age did not materialise. This may be due to three factors. The way in which the age groups were divided in this study may have failed to capture accurately the response of the older age groups. Many studies (see, for example, Castles 1992) use age groups of ten years, a method which would have divided the 30+ age group of this study into two or three age groups. Alternatively, as Wall (1995) suggests, age may be less important as an explanatory variable due to widespread media attention and easily accessible information on environmental issues. This may have had an attentuating affect on the influence of age in this sample. Finally, it may be that the skewed nature of this sample excluded older age groups to the extent that any negative relationship between age and environmental concern was obscured.

With regard to education, the results found were, as expected, somewhat vague. Postgraduate respondents were only slightly more likely than undergraduates to express environmental concern. On the basis of this result, it seems reasonable to suggest that the differences in expressions of environmental concern are greater between levels of schooling (i.e. respondents with little or no secondary schooling, respondents who completed secondary school, and respondents who are undertaking tertiary education) than the differences in responding among different levels of University students (i.e. undergraduate, postgraduate, other tertiary qualifications). In fact many studies (see, for example, Castles

1992) do not separate postgraduates and undergraduates. However, the lower likelihood of 'Other' respondents expressing environmental concern may suggest a more utilitarian, practical focus of the type of applied education available from technical colleges, apprenticeships, etc.

While the literature had little with which to compare the results for country of childhood and ethnic identity, the international survey by Dunlap, Gallup, & Gallup (1993) indicates that there is little difference between the levels of environmental concern in Western and Eastern nations. However, the Eastern nations in their study were Japan, Korea, and the Philippines, whereas the majority (68.1%) of foreign-raised and foreign-ethnic respondents in this study were Chinese from HongKong, Taiwan, or Malaysia. The effect of New Zealand-ethnic and New Zealand-raised respondents expressing higher levels of environmental concern was consistent across many variables. Acculturation is said to have a conforming effect on environmental concern (Caro & Ewert 1995), and the difference in responding between foreign and New Zealand respondents suggests that most foreign respondents have not been resident in New Zealand for very long.

One feature of this difference in responding between New Zealand and foreign respondents was the consistently stronger support of the latter for a difference between men and women in environmental concern (the Gender Perception items). One suggestion for this difference may be a weaker emphasis on the political correctness of gender equality in Asian countries, a factor that seemed to dominate the comments of New Zealand respondents who chose to disagree or express no opinion.

The results for both region of childhood and type of area of childhood support the case for large-urban-raised respondents expressing higher levels of environmental concern. Perhaps surprisingly, this effect was consistent with the literature findings despite the fact that the large-urban areas of New Zealand might be considered suburban areas in larger nations. This result is also surprising in that most New Zealand urban residents are a comparatively short distance from rural, coastal, bush, or river settings. The direct relationship between size of place of socialisation and environmental concern found by Lowe & Pinhey (1982) was supported by this study.

Direct questions resulting in a positive response to the importance of environmental issues and personal concern for rural-raised respondents, were not supported by other measures of environmental concern. This may suggest some degree of social desirability or

'political correctness' associated with these questions for rural-raised respondents. Unfortunately, whether rural-raised respondents were raised in agricultural or horticultural backgrounds was not asked of this sample, as the type of rural upbringing may have had some bearing on this.

With respect to knowledge, most respondents support the statements for the Assumption and Ecological Concepts variables. To the extent that these variables represent knowledge of concepts basic to ecological processes and physical constraints on the people-environment relationship, generally, this sample appears to be knowledgeable. Since this sample is also comparatively well educated, this could suggest a relationship between education and environmental knowledge. However, it is important to note that up to half the respondents demonstrate lack of knowledge or misunderstanding with regard to particular aspects of knowledge, although this did not appear to be strongly associated with a particular subgroup. Specifically, women did not consistently indicate a lesser degree of knowledge than men.

The hypothesis that women are more concerned about the environment is supported by the results for this sample. Women expressed higher levels of stated concern and were more likely to choose the environment as the 'most important problem'. This was confirmed by higher levels of concern expressed by women for most aspects of environmental concern. Women were also more supportive of the perception of a gender difference in environmental concern to the effect that women were more concerned for the environment. While women were not less knowledgeable with regard to ecological concepts, they did demonstrate a lower understanding of aspects of the physical constraints on the people-environment relationship. In addition, the finding of Burns (1990), that women were more likely to express concern for the negative impacts of science and technology, was supported by this study.

Men did not exhibit higher levels of internal locus of control than women as expected. In fact, the high level of internal locus of control in this sample (as measured by the Environmental Powerlessness item) was somewhat incongruous with the high level of support for increased governmental regulation of environmental problems. However, as the Government Regulation item did not ask respondents to choose between the responsibility of government or individuals to intervene in protecting the environment, this result is not entirely unexpected.

This population expresses a high degree of internal locus of control, and are therefore likely to believe that their actions to protect the environment will be effective. While the mean response of most respondents is to express moderate concern, almost as many express strong concern for the environment. However, it cannot be assumed that this strong concern is akin to Ramsey & Rickson's (1976) 'passionate interest', which is most likely to lead to environmentally responsible action. In addition, the low salience and moderate importance of environmental issues, as well as the strong support for government intervention, may well indicate that environmentally responsible behaviour will not necessarily result from even the strongest environmental concerns.

CHAPTER 6

Summary and Conclusions

The environmental attitudes, beliefs, and concerns of a sample of University of Canterbury Commerce students were the subject of this study. This research was concerned with the description of environmentally concerned individuals and the characteristics of environmental concern. Specifically measures of environmental concern were utilised in an attempt to identify the characteristics of concerned individuals within the sample population. These measures included items designed by the researcher, in addition to those used and selected from environmental attitude research. Using a questionnaire format with a five-point response scale, respondents were asked to express their level of agreement to items measuring various aspects of environmental concern.

Given that this sample were skewed by age and education, support for protection of the environment was expected. In fact, urban individuals, women, and New Zealand-raised and -ethnic individuals did demonstrate higher levels of environmental concern. The bias towards higher education and youth is suggested to have partly obscured the true effect of these variables.

Despite this study being limited by both its general focus and the self-selected, skewed nature of the sample population, it demonstrates that the entrenchment of environmental concern found overseas has become manifest in New Zealand. However, it must be emphasised that this sample were not normal in composition. They had a very restricted age and education distribution, and were exclusively Commerce students. These characteristics will have contributed to the nature of their response patterns, and may indicate that this sample have more characteristics in common than characteristics that differ.

The majority of this sample expressed support for both the New Environmental Paradigm and environmental concern in general. Although the mean responses of individual respondents were higher than expected from studies which segmented their samples, the characteristics of environmental concern found in this study were generally similar to that described for overseas populations. However, doubt was expressed as to whether this high level of concern would be translated into appropriate action.

In introducing the topic of environmental concern, Dunlap & Mertig (1992) were quoted as saying that history would mark the environmental movement as one of the few that produced significant societal change. The response of this population certainly supports this contention. But the value of this change will depend on whether the environmental movement can orchestrate a widespread move from well-placed concerns to genuine commitment and sustained, appropriate behavioural change. As Dunlap & Mertig (1992, p.8) put it: "[H]istory will judge [the environmental movement] in terms of its success in halting environmental deterioration rather than in simply avoiding its own demise."

6.1 Suggestions for Further Research

There are three main areas that require further research following on from this study. One of the original ideas behind this research was the conviction that both local authorities and central government have no concept of the characteristics of environmental concern of people within their constituencies. The following ideas for further research use this deficiency as their focus by concentrating on ways in which this problem can be ameliorated, and how studies of this type could enhance the effectiveness of environmental policies and actions.

First, the general environmental attitudes, and the characteristics of environmentally concerned individuals within the New Zealand public, should be established. As the present sample consisted of University of Canterbury Commerce students, who were not representative of New Zealanders, this research cannot claim to be even slightly suggestive of the views of other groups of New Zealanders. A study of this type could confirm whether environmental concern does in fact vary with age and education. It would also allow an assessment of the effect of income and occupation not possible in this study. A national study may highlight differences between the attitudes and levels of concern held by different regions of New Zealand in a way that this study could not. For example, it may be that residents of, say, Auckland, are disproportionately more concerned for the environment.

Secondly, research has shown that general environmental concerns are not indicative of the level of local and specific environmental concern, which is the level at which people are more likely to become involved. I suggest that regional studies be conducted to

ascertain the local and specific issues which concern New Zealanders, and their attitudes toward those issues. Regional studies could specify to what degree communities or occupations which receive information about environmental problems sympathetically. This would allow local and regional authorities to more accurately assess environmental policy priorities, and to gauge the success with which different types and strengths of implementation options will be received by communities. If one knows which issues are of greatest concern, one can speak to those concerns and take the most appropriate actions.

The other side of this particular coin is public action and involvement. Maloney & Ward (1973) show that although concern for and verbal commitment to environmental problems are high, actual commitment and knowledge, about both the problem and what can be done to help, are low. The third area for further research should be to quantify the concrete knowledge of New Zealanders in terms of the problem itself, as well as the skills and/or actions required by individuals to ameliorate the problem. This research should also quantify the level to which New Zealanders are already performing environmentally responsible actions. This would be of value to local and regional authorities when targeting groups to promote environmentally responsible behaviour, in addition to avoiding both 'overkill' and 'preaching to the converted'.

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APPENDIX 1

Final Survey Draft

Please note that the item codes shown in bold type below items in the example questionnaire below are included for the benefit of the reader. They were not included in the questionnaire given to the sample population.

Hi, my name is Louise Saunders, a Master of Science student. This year I am completing my thesis, of which this questionnaire fulfils part of the requirement. The survey is being carried out to find out how you feel about some issues in New Zealand.

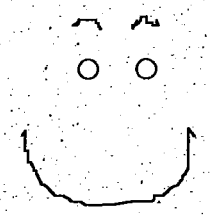
You are asked not to put your name on the questionnaire so that your answers are completely confidential, and no individual will be able to be identified in any reporting of the results. However, if you would like a copy of the results, please write your name and a postal address where you can be reached next year on the detachable sheet on the reverse of this page, and hand this in.

Please try and answer all the questions, and remember that there are no right or wrong answers. We are interested in how you feel about things and, as such, your own answers are most valuable to us.

I will collect your completed questionnaire at the end of your next class.

If you have any concerns or queries, please feel free to contact Louise Saunders in the evenings on 352 5710.

MANY THANKS !!!



If you would like to receive a copy of the results of this survey when they become available next year, please fill in your details below and hand in this sheet with your questionnaire.

Name: _____

Postal Address in 1996: _____

_____

_____

_____

Unless indicated, please tick only one box for each question.

1. In your opinion, what is the most important issue or problem in New Zealand today?

_____

2. Using the scale below, please indicate how important you personally consider environmental problems ar issues to be in New Zealand:

The most important issue	A very important issue	A quite important issue	A less important issue	A not at all important issue
☐	☐	☐	☐	☐

CONCERN

3. When you think about environmental problems, what are the first three (3) problems that come to mind?

_____

_____

_____

4. Overall, from what you know, how would you rate the quality of the natural environment:

	Very Good	Good	Neither Good nor Bad	Bad	Very Bad	Don't Know
a) in the world as a whole	☐	☐	☐	☐	☐	☐
b) in New Zealand	☐	☐	☐	☐	☐	☐
c) in Canterbury	☐	☐	☐	☐	☐	☐

QUAL1W, QUAL2NZ, QUAL3C

5. How concerned are you personally about environmental problems and issues?

Very Concerned	Somewhat Concerned	Neither Concerned nor Unconcerned	Unconcerned	Very Unconcerned
☐	☐	☐	☐	☐

IMPTC

Please tick the box which best represents your agreement or disagreement with these statemei

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't Know
1. Natural resources should be used primarily for the benefit of the present generation. **TIME 1**	☐	☐	☐	☐	☐	☐
2. The life of the big city is far more interesting than the natural environment could ever be. **URBAN 1**	☐	☐	☐	☐	☐	☐
3. Whether or not future generations can solve environmental problems, we should not put them in the position of having to do so. **TIME 2**	☐	☐	☐	☐	☐	☐
4. Science and technology often do as much harm as good. **TECHNO 1**	☐	☐	☐	☐	☐	☐
5. Because of our polluting activities, we run a very serious risk of making the earth unsuitable for people to live in. **CFED 1**	☐	☐	☐	☐	☐	☐

How much do you agree or disagree with each of these statements:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't Know
6. The earth is finite. **ASSUM 1**	☐	☐	☐	☐	☐	☐
7. The positive benefits of economic growth outweigh any adverse consequences on the natural environment. **ECON 1**	☐	☐	☐	☐	☐	☐
8. The balance of the natural environment is very delicate and easily upset. **BON 1**	☐	☐	☐	☐	☐	☐
9. Sometimes we have to put up with or accept a certain amount of pollution since the cost of cleaning it up or preventing it might cause a decline in economic growth. **ECON 2**	☐	☐	☐	☐	☐	☐

Please tick one box to show how much you agree or disagree with each statement:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't Know
10. People are no longer dependent on the natural environment. **ASSUM 2**	☐	☐	☐	☐	☐	☐
11. Our cities have become too big. **URBAN 2**	☐	☐	☐	☐	☐	☐
12. People must live in harmony with the natural environment in order to survive. **BON 2**	☐	☐	☐	☐	☐	☐
13. The natural environment does not impose limits on economic growth because resources are generally sufficient. **ASSUM 3**	☐	☐	☐	☐	☐	☐
14. People need not adapt to the natural environment because they can remake it to suit their needs. **HON 1**	☐	☐	☐	☐	☐	☐

How much do you agree or disagree with each of these statements?

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't Know
15. People can get along without natural resources. **ASSUM 4**	☐	☐	☐	☐	☐	☐
16. Although polluted environments may look and/or smell bad, they are not usually harmful or dangerous to the natural environment. **CFED 2**	☐	☐	☐	☐	☐	☐
17. Men tend to be more interested than women in manipulating the natural environment and using its resources. **GENDER 1**	☐	☐	☐	☐	☐	☐
18. What is needed are stronger laws to force industries, Government, and individuals to decrease or eliminate pollution. **LEGALISM**	☐	☐	☐	☐	☐	☐

Please tick one box which best represents your agreement or disagreement with these statem

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't Know
19. If our rate of consumption keeps growing, we will soon exhaust the earth's natural resources. **SCAW**	☐	☐	☐	☐	☐	☐
20. There are limits to growth beyond which our industrialised society cannot expand. **LTG 1**	☐	☐	☐	☐	☐	☐
21. Nature knows best. **TENET 1**	☐	☐	☐	☐	☐	☐
22. Every action and event has an effect on and consequence in the natural environment. **TENET 2**	☐	☐	☐	☐	☐	☐
23. There is really no point in getting upset over pollution as there is little we can do to stop it. **ENPOW**	☐	☐	☐	☐	☐	☐
24. The earth is vast with almost unlimited natural resources. **LTG 2**	☐	☐	☐	☐	☐	☐

Please tick one box to show how much you agree or disagree with each statement:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't Know
25. Environmental problems are not affecting my life. **ENCO 1**	☐	☐	☐	☐	☐	☐
26. Directly or indirectly, everything is connected to everything. **TENET 3**	☐	☐	☐	☐	☐	☐
27. When people interfere with the natural environment it often produces disastrous consequences. **BON 3**	☐	☐	☐	☐	☐	☐
28. Everything must go somewhere. **TENET 4**	☐	☐	☐	☐	☐	☐
29. The native bush landscape is boring in its sameness. **URBAN 3**	☐	☐	☐	☐	☐	☐

How much do you agree or disagree with each of these statements?

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't Know
30. The natural environment is valuable in itself, and not simply as a source of resources. **HON 2**	☐	☐	☐	☐	☐	☐
31. Women are more concerned about environmental problems and issues than men. **GENDER 2**	☐	☐	☐	☐	☐	☐
32. Protecting the natural environment should be given priority, even at the risk of slowing down the growth of the economy. **ECON 3**	☐	☐	☐	☐	☐	☐
33. Although there is continual contamination of lakes, streams, and air, the purifying processes of the natural environment soon return them to normal. **ENCO 2**	☐	☐	☐	☐	☐	☐

Please tick the box which best represents your agreement or disagreement with these stateme

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	Don't Know
34. The natural environment is a system of resources which people should control, transform, and organise to suit their own needs. **HON 3**	☐	☐	☐	☐	☐	☐
35. Science and technological break-throughs have abolished resource scarcity. **ASSUM 4**	☐	☐	☐	☐	☐	☐
36. Women are more concerned about degradation of the environment than men. **GENDER 3**	☐	☐	☐	☐	☐	☐
37. Most environmental problems can be solved by applying more and better technology. **TECHNO 3**	☐	☐	☐	☐	☐	☐

About You!!

Please answer the following questions about yourself, and remember that all responses remain STRICTLY CONFIDENTIAL.

1. Please indicate how old you are: _____

2. What is your sex? Female ☐

Male ☐

3. Which of these categories best describes your marital status?
(Please tick ONE category only).

Single ☐

Married/ Living with Partner ☐

Other ☐

4. Please write how many years you have been enrolled at a University (e.g. 1 if this is your first year):

_____

5. Do you have previous University or Polytechnic qualifications?

No ☐ If no, please go to Question 7.

Yes ☐ If yes, please go to Question 6.

6. Which type of qualification do you hold?
(Please tick as many as apply).

Bachelor degree ☐

Masters degree ☐

Ph. D. ☐

Diploma ☐

Other (please specify) _____

7. Please indicate your current enrolment status:

Full time ☐

Part time ☐

8. Please describe your ethnic identity (e.g. New Zealand Maori):

_____

9. Please indicate the country in which you spent most of childhood:

New Zealand ☐ Please go to Question 10.

Elsewhere ☐ Please specify which country:

_____

10. If you indicated *New Zealand* at Question 9, please indicate the region in which you spent most of your childhood (e.g. Bay of Plenty):

_____

11. What type of area were you raised in?

Rural ☐

Small Urban ☐ Name town/s: _____

Large Urban ☐ Name city/ies: _____

If you have any other comments you wish to add on any of the topics raised in this questionnaire, we welcome them. Please write them in the space provided below:

_____

_____

_____

_____

_____

_____

_____

You have now reached the end of the questionnaire. Many thanks for your co-operation and your time. Your contribution to this study has been greatly appreciated. Don't forget to fill in the detachable sheet at the front should you wish to receive a copy of the results when they are available next year.

APPENDIX 2

The Interaction of Demographic Variables

This appendix describes the interaction of demographic variables not set out in Section I of the Results.

Age

In all age groups except 30+ years, years of enrolment increased with age. However, the 23-29 and 30+ age groups both showed increasing numbers of respondents in their first or second year of enrolment, indicating respondents returning to study later in life. Not surprisingly, the likelihood of a respondent being married increased with age, and more older respondents were enrolled for part-time study.

Country of Childhood

A smaller proportion of New Zealand respondents were married or enrolled as a part-time students than foreign respondents. Foreign respondents were most likely to be raised in large urban centres, and least likely to be raised in small urban centres, while New Zealand respondents were more likely to be raised in small urban centres, and least likely to be raised in large urban centres. Of the foreign respondents, more were female and in the older age groups. However, there were comparatively more foreign respondents in their first year of enrolment, and fewer in later years.

Area Type

There were twice as many respondents raised in small urban areas in the first year of enrolment, but less in their second year, than those respondents raised in large urban or rural areas. Those raised in rural areas were least likely to be in their third year, while those raised in large urban areas were least likely to be enrolled for four or more years. More of those respondents raised in rural areas were married, while more of those raised in large urban areas were single.

Qualifications

More of those respondents raised in smaller centres had previous qualifications, compared to those raised in large urban centres. Almost four times as many part-time as full-time students, and almost twice as many women as men, had previous qualifications. In

addition, older respondents, married respondents, and those enrolled over long periods, were more likely to have previous qualifications.

Gender

Fewer male respondents were enrolled in long-term study, i.e. 4+ years, while more female respondents were enrolled as part-time students, had previous qualifications, and were enrolled in long-term study. Females were more likely to have been raised in rural areas and least likely to have been raised in large urban areas. Female respondents were, on average, slightly older than male respondents, and more likely to be married.

Years of Enrolment and Status

Those enrolled in long-term study, 4+ years, were more likely to be married or enrolled as part-time students. Those respondents without previous qualifications were more likely to be enrolled in full-time study.

APPENDIX 3

Means and Standard Deviations

Category	Variable	Mean	Standard Deviation
Assumption	ASSUM1	2.23	1.11
	ASSUM2	1.87	0.82
	ASSUM3	2.37	0.93
	ASSUM4	1.63	0.73
	ASSUM5	2.03	0.80
	Mean of ASSUM	2.03	0.51
Balance of Nature	BON1	2.16	0.85
	BON2	2.14	0.86
	BON3	2.24	0.79
	Mean of BON	2.17	0.60
Concern for Environmental	CFED1	1.99	0.83
Degradation	CFED2	1.58	0.70
	Mean of CFED	1.78	0.63
Personal Concern	CONCERN	2.09	0.75
Economics	ECON1	2.09	0.85
	ECON2	2.50	1.13
	ECON3	2.43	0.88
	Mean of ECON	2.31	0.73
Environmental Concern	ENCO1	2.30	0.96
	ENCO2	2.09	0.79
	Mean of ENCO	2.22	0.77
Environmental Powerlessness	ENPOW	1.63	0.70
Gender Perceptions	GENPER1	3.25	1.08
	GENPER2	3.37	1.07
	GENPER3	3.43	1.05
	Mean of GENPER	3.33	0.95
Humans Over Nature	HON1	2.14	0.94
	HON2	1.69	0.69
	HON3	2.31	0.95
	Mean of HON	2.10	1.33
Importance of	IMPTC	2.33	0.67
Environmental Issues			

Category	Variable	Mean	Standard Deviation
Legalism	LEGALISM	1.99	0.78
Limits to Growth	LTG1	2.61	0.92
	LTG2	1.66	0.76
	Mean of LTG	2.06	0.66
Quality of the	QUAL1W	3.52	0.88
Natural Environment	QUAL2NZ	2.11	0.76
	QUAL3C	2.15	0.82
Scarcity Awareness	SCAW	2.16	0.84
Technocentrism	TECHNO1	2.62	0.99
	TECHNO2	2.73	0.91
	Mean of TECHNO	2.67	0.92
Ecological Concepts	TENET1	2.48	0.92
	TENET2	2.38	0.87
	TENET3	2.12	0.72
	TENET4	2.03	0.68
	Mean of TENET	2.26	0.56
Time Orientation	TIME1	1.89	0.85
	TIME2	2.00	0.89
	Mean of TIME	1.95	0.65
Urbanism	URBAN1	1.95	0.92
	URBAN2	3.07	0.89
	URBAN3	1.62	0.83
	Mean of URBAN	2.18	0.63
New Environmental Paradigm	Mean of BON, HON, & LTG	2.11	0.89
Overall Environmental Concern	Mean of all except QUAL & GENPER	2.14	0.92